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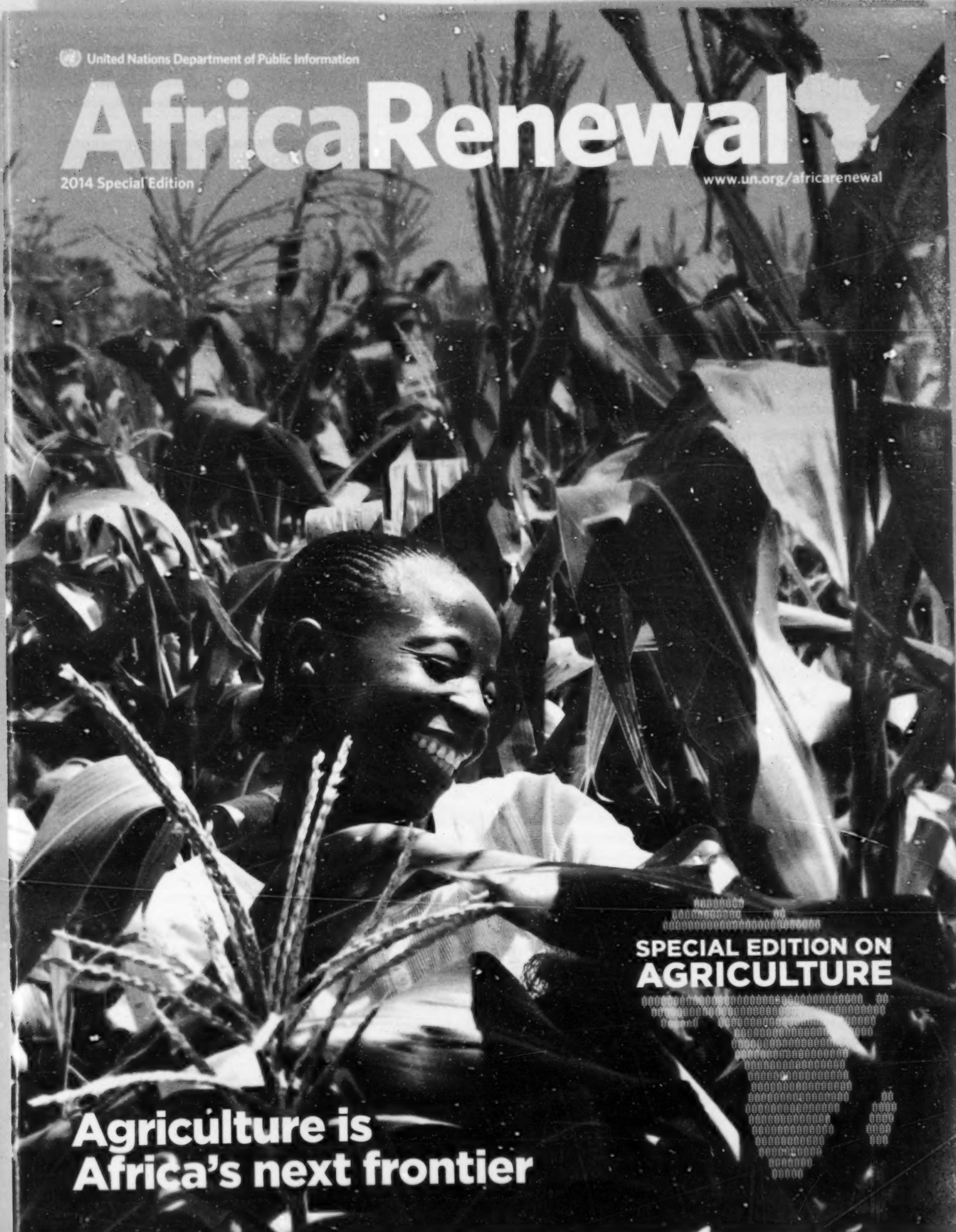

SPECIAL EDITION ON
AGRICULTURE

Agriculture is Africa's next frontier

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Farm labourers sort coffee beans at a small farm in the village of Konga in Yirgacheffe, Ethiopia.
Panos/Ami Vitale

Cover photo: ***A farmer checks her maize plants on a 0.5 hectare field near Gwamura Village, Zimbabwe.*** Panos/Mikkel Ostergaard

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SPECIAL EDITION ON AGRICULTURE

AS THE AFRICAN UNION MARKS 2014 AS THE YEAR OF AGRICULTURE AND FOOD SECURITY, this special edition looks at the many challenges and opportunities facing Africa's agriculture – from land issues, to investments and innovations inspired by information technology, to the important role played by women in fighting hunger and malnutrition. It mixes new and updated stories that have been previously published in *Africa Renewal* over the past few years.

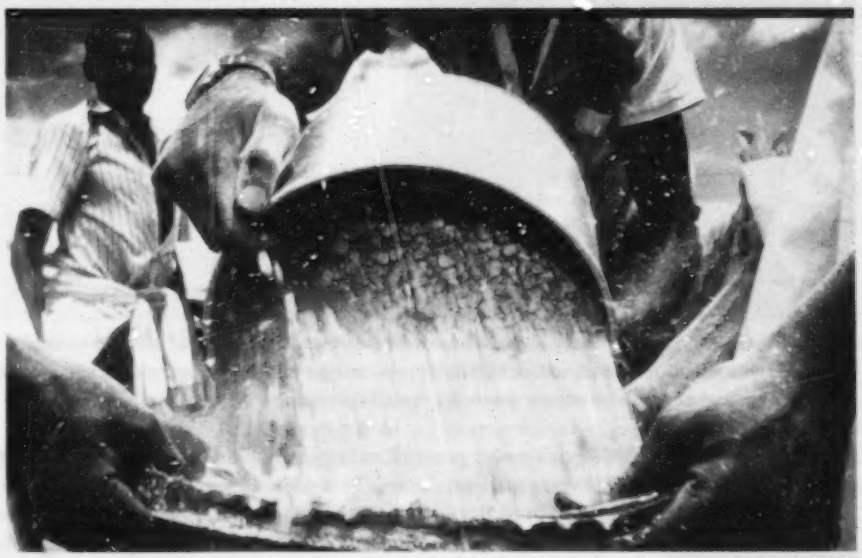
Africa's food policy needs sharper teeth

Good intentions alone are not enough

By **Masimba Tafirenyika**

Amid raving economic forecasts that Africa will be the next big emerging market, chronic food shortages remain stubbornly immune to solutions. The African Union is aware of this weak link and is working to convince its members to boost investments in agriculture. To emphasize the central role of agriculture in Africa's economic growth, the regional body has declared 2014 as the Year of Agriculture and Food Security.

Convincing leaders to treat agriculture not only as a solution to end poverty and hunger but also as a major contributor to economic development deserving of public investments is a tall order. It demands strong political commitment and an enlightened leadership. But there are signs of progress, thanks in part to an innovative programme by the AU's development agency, the New Partnership for Africa's Development, called the Comprehensive Africa Agriculture Development Programme (CAADP), which marks its 10th anniversary this year.



Aid distribution of maize in a small village in Malawi. Panos/Mikkel Ostergaard

Powerful message

CAADP's message is simple but powerful: More investments in agriculture will end hunger and lift millions out of poverty. The programme has several elements, but the best-known requires signatories to spend at least 10% of their budgets on agriculture and to strive for an annual 6% growth in agriculture. As of end of December 2013, 40 countries have signed up for the programme, but only nine have attained the 10% target.

CAADP's scorecard so far is mixed. Some countries are still grappling with the teething troubles of translating its plans into action. But those that have faithfully put the programme into action are seeing positive changes. For example, Rwanda, the first country to adopt the programme in 2007, increased the land allocated to maize production almost five fold in three years. As a result, maize harvests rose by almost 213% – from less than 0.8 tonnes per hectare to 2.5 tonnes – over the same period. Malawi also scored comparable successes – before the government reduced support to agriculture when faced with a budget crisis in 2012 – along with Sierra Leone and Tanzania, among others. Since 2003, Africa's annual agricultural growth has averaged nearly 4%, well above the growth rates for the previous several decades.

While several countries have made inroads in tackling the challenges of hunger, undernourishment and extreme poverty, Africa remains a net food importer and produces far less than its potential. The chief culprits are bad policies and, to a lesser

see page 34

Africa's economy grows, but many stomachs are empty

By **Kingsley Ighobor**

Women in Medo, Ethiopia tend to Moringa cabbage trees (Moringa Stenopetala) as part of a horticulture training project. Moringa cabbage trees are drought-resistant and are able to produce high yields even during droughts. Moringa plays a vital role for household food security, as a source of income, medicine, fodder, fuel and shade all year round. Panos/Mikkel Ostergaard

15mn

People facing serious risks of undernourishment in the Sahel and an equal number in the Horn of Africa

Each year, governments, journalists, development experts and others look forward to the United Nations Development Programme's *Human Development Report*. The report includes a ranking of countries based on life expectancy, literacy, quality of life and so on. Once it is released, governments and citizens of countries with high rankings immediately trumpet their achievements. Those with lower rankings, such as the Democratic Republic of the Congo, which was last in 2013 in Africa, come in for criticism.

When UNDP announced it would launch its first-ever *Africa Human Development Report* in 2012, many expected that it would also include a general country ranking. Instead, the regional report focused on the theme "Towards a food secure future," with extensive analyses and recommendations on that topic. If the intention of the 190-page report was to generate debate on filling empty stomachs in Africa with nutritious food, that goal was accomplished — probably beyond expectations.

Setting the tone

Helen Clark, UNDP administrator, and Tegegnework Gettu, then director of the Programme's Africa bureau, set the tone in the opening pages of the report. Ms. Clark writes: "It is my hope that this first *Africa Human Development Report* will energize a debate on how to strengthen food security ... and lead to more decisive action."

Mr. Gettu's preface is a provocative clarion call to African leaders. "Africa is not fated to starve," he writes. "That is an affront to both its dignity and its potential.... Africa must stop begging for food.... Had the African governments over the last 30 years met their people's aspirations, the report would not be necessary. One quarter of the people in sub-Saharan Africa would not be undernourished, and one third of African children would not be stunted."

Nigeria's former President Olusegun Obasanjo echoed Mr. Gettu's theme, saying that African leadership should be indicted in the area of food production. "It tells us what we know: that the poverty of Africa

is the making of African leaders over the years."

During Asia's green revolution, for example, many Asian countries spent up to 20% of their budgets on agriculture, while African countries currently spend between 5 to 10% on the sector. This is despite African leaders' commitment in 2003 to allocate at least 10% of national budgets to agriculture. At the moment, Africa spends more on the military than on agriculture.

Hunger amidst plenty

There is a harsh paradox of suffering amidst plenty; of a continent with rich, arable land but unable to feed its citizens. "Hunger and malnutrition remain pervasive on a continent with ample agricultural endowments," notes Mr. Gettu. "Africa has the knowledge, the technology, and the means to end hunger and insecurity."

Sub-Saharan Africa is the world's most food-insecure region and where poverty is particularly alarming, according to UNDP. Up to 25% of sub-Saharan Africa's 856 million people are undernourished, with 15 million people facing serious risks in the Sahel and an equal number in the Horn of Africa.

The worsening food situation dampens glowing reports on Africa's fast-growing economies, which have expanded by an annual average of 5% to 6% during the past decade. However, notes Ms. Clark, "Impressive GDP growth rates in Africa have not translated into the elimination of hunger and malnutrition."

Ms. Clark canvasses coordinated solutions. "Building a food-secure future for all Africans will only be achieved if efforts span the entire development agenda." Without good roads, for example, surplus food cannot enter the market.

Important steps

The right steps can be taken right away to stem the tide of food insecurity. Some of these steps are listed in the UNDP report: "Greater agricultural productivity of smallholder farmers; more effective nutrition policies, especially for children; greater community and household resilience to cope with shocks; and wider popular participation and empowerment, especially of women and the rural poor."

It appears that many African leaders agree with these steps. For example, Africa's first elected female president, Ellen Johnson-Sirleaf of Liberia, considers the role of women in food security "profound and critical." According to President Johnson-Sirleaf, better education and access to food assets such as land, capital and labour will likely increase productivity by 20%. Her position aligns with the report, which urges countries to "end decades of bias against agriculture and women," because women's education can lower malnutrition in children more than an increase in household income. Compared with other regions, African women have the least access to land.

Former Kenyan President Mwai Kibaki once linked nutritious food to mental and physical well-being, and added that "it also enables people to exercise their freedoms and capabilities in different fields." Kenya is rated as a high-risk food-insecure country. During his time in office, President Kibaki said that a five-year drought had a huge negative impact on agriculture. Kenya's agricultural sector has however been revived from a negative growth of 2.3% in 2009 to over 6.3%.

> **"Africa has the knowledge, the technology, and the means to end hunger and insecurity.**

Analysts believe that agriculture is the main driver of the Kenyan economy, which the IMF projects will grow at 6.2% this year. Anders Ostman, a former head of the Swedish International Development Agency in Africa, advised Kenya and other African countries to pay more attention to agriculture. Kenyan President Uhuru Kenyatta said last year that his government would assist farmers to adopt modern farming technology that will bring about a "revolution" in agriculture.

However, Africa faces some headwinds in agricultural development. Opinion is unanimous that climate change will have a negative impact on agriculture. "Africa is most susceptible to variations in agro-climate," according to the late Ethiopian Prime Minister Meles Zenawi, who noted that "climate change exacerbates the problem of food insecurity." The semi-arid region from Senegal to Chad and the Horn of Africa, particularly Djibouti, Ethiopia, Kenya and Somalia, have all been affected by severe climate conditions, according to the *Africa Human Development Report*.

In addition to the impact of drought on food security, famines often also get the headlines, even though uneven access to food due to low incomes is as much a problem. "The silent crises of chronic malnourishment and seasonal hunger do not receive nearly enough attention," notes the report. Increased agricultural production does not necessarily guarantee food security unless there are improvements in access to health, better roads, more job opportunities and empowerment of women.

Bright spots

Notwithstanding the deplorable food situation in sub-Saharan Africa, there are many bright spots, including Nigeria, where the government's Agricultural Transformation Agenda is expected to ensure food sufficiency and create 3.5 million jobs by 2015. Ghana has already halved poverty by boosting cocoa farmers, becoming the first sub-Saharan country to achieve the first Millennium Development Goal, which is to reduce by half the proportion of people living in poverty and hunger by 2015.

Malawi undertook a huge seed and fertilizer subsidy programme and turned its food deficit into a 1.3 million tonne surplus in just two years. In Senegal child malnutrition was lowered from 34 to 20% between 1990 and 2005 through increased national agricultural budgets. By increasing agriculture's budget from 1.6% in 2008 to 7.7% in 2009, Sierra Leone grew 784,000 tonnes of rice, above the domestic requirement of 550,000 tonnes.

As the continent posts world-beating economic growth rates, it needs to move faster to fill empty stomachs with nutritious food. Time will tell whether the current set of African leaders can achieve that goal.

Parched soil by the White Nile in Khartoum, Sudan. World Bank/ Arne Hoel

Despite climate change, Africa can feed Africa

By **Richard Munang and Jesica Andrews**

Climate change comes with never-before-experienced impacts. For example, crop yields and growing seasons will decrease even as changing rain patterns will worsen people's access to water. Yet Africa's population is projected to reach 2 billion in less than 37 years, and in 86 years three out of every four people added to the planet will be African.

Decreasing crop yields and increasing population will put additional pressure on an already fragile food production system. That is why experts have warned that if the current situation persists, Africa will be fulfilling only 13% of its food needs by 2050. This situation will further threaten about 65% of African workers who depend on agriculture for their livelihoods including children and the elderly, who are particularly vulnerable to food insecurity.

Hunger already affects about 240 million Africans daily. By 2050, even a change of about 1.2 to 1.9 degrees Celsius will have increased the number of the continent's undernourished by 25% to 95% (central Africa +25%, East Africa +50%, Southern Africa +85% and West Africa +95%). The situation will be dire for children who need proper nourishment to succeed in their education. The Economic Commission for Africa (ECA) has estimated that African countries could lose between 2% and 16% of gross domestic product due to stunting of children as a result of malnutrition.

Climate-stressed African agriculture

Changes in climate such as higher temperatures and reduced water supplies, along with other factors like biodiversity loss and ecosystems degradation, affect agriculture. According to *Science*, a leading international research journal, by 2030 Southern Africa and South Asia will be the two regions in the world whose crop production is most affected by climate change. For example, while wheat varieties grow well in temperatures between 15°C and 20°C, in sub-Saharan Africa the average annual temperature currently exceeds this mark during the growing season. Therefore, if current climate trends continue, by 2030 wheat production is likely to decline by 10% to 20% from 1998–2002 yields.

Food insecurity will likely lead to social unrest, as has been the case in the past. For example, between 2007 and 2008, riots took place in several countries when prices of staples peaked. In 2010, hundreds of protesters took to the streets in Mozambique after wheat prices went up by 25% due to a global wheat shortage caused in part by wheat-crop-destroying wildfires from record heats in Russia. The increase in bread prices led to fires, violence, looting and even deaths.

Fears extend beyond wheat scarcity. *The Africa Adaptation Gap Report* by the UN Environment Programme, the UN organ responsible for promoting sustainable use of the environment, confirmed

the World Bank's recent findings that with warming of about 2 degrees C, all crop yields across sub-Saharan Africa will decrease by 10% by the 2050s; greater warming (which is more likely) will cause crop yields to decrease by up to 15% or 20%.

Further bad news for African agriculture is that by the middle of this century, wheat production could decrease by 17%, maize production by 5%, sorghum production by 15% and millet production by 10%. Additionally, if climate warming exceeds 3 degrees C, all present-day cropping areas for maize, millet and sorghum will be unsuitable for those crops. The question becomes, is Africa's agricultural system ready to respond?

Protecting water resources

Increasing crop production amidst climate change has been done before, and analysts believe that African countries need to incorporate this knowledge in their planning. They will also need to protect and fortify their water resources, which are critical to food security.

In the coming years, water for agriculture will be stretched to a painful extent. In Africa, 95% of agriculture relies on rainfall for water, according to the United Nations Environment Programme (UNEP). The World Bank notes it is very likely that by 2100 the total availability of water in all of Africa could decline by more than 10%. In addition, climate change threatens biodiversity and ecosystems, which are the foundation of agriculture.

Biodiversity losses and ecosystem degradation will affect the quality of the soil and the vegetation upon which livestock depends, states the World Bank, adding that potential reductions in water, biodiversity and crops should compel Africa to pay closer attention to its current food system. In short, Africa needs an approach that works with nature, not against it.

New and better approaches

There is a continuing argument as to whether the industrial agricultural revolution will solve some or all of Africa's climate change problems. However, experts maintain that industrial agriculture currently accounts for one third of all greenhouse gas emissions—the very element most responsible for climate change. Additionally, they believe that the resources and infrastructure required to operate an industrial agricultural system in Africa are impractical for smallholder farmers.

New machines also mean fewer hands, which may increase joblessness while reducing wages, affecting many who depend on agriculture. Because current practices cannot meet future demands, Africa must apply new and better approaches.

In July 2013, African leaders made an ambitious pledge to end hunger by 2025. They mean to do this by encouraging farmers to move away from cash crops, fragile cropping systems and heavily fertilizer- and pesticide-dependent systems and to adopt sustainable and climate-resilient practices. Nutrient depletion alone accounts for $1 billion to $3 billion per year in natural capital losses, according to findings by the New Partnership for Africa's Development (NEPAD).

Ecosystem-based adaptation

Unlocking Africa's potential requires that policy makers in agriculture and the environment join forces with civil society and non-governmental organizations to consider options that will enable the environment and farmers to cope with climate change. One of the options being advocated is the ecosystem-based adaptation, which is to mitigate climate change impact through the use natural systems such as drought-resistant varieties, more efficient methods of water storage and more diversity in crop rotation, says UNEP.

In Zambia, 61% of farmers who applied an ecosystem-based adaptation, such as natural resource conservation or sustainable organic agricultural practices, reported surplus yields. Some yields even increased by up to 60%, while sales of surplus crops grew from 25.9% to 69%.

In Burkina Faso, farmers are using indigenous methods to rehabilitate land. By digging small pits (locally referred to as zaï) on barren plots and filling them with organic matter, some Burkinabe farmers are able to add nutrients to the soil while enhancing groundwater storage to improve crop productivity. These farmers have reclaimed 200,000 to 300,000 hectares of degraded lands and have produced an estimated 80,000 to 120,000 additional tonnes of cereal.

Other options include protecting watersheds and reinforcing their capacity to hold water and carry it to those who need it most; using integrated pest management, which is a natural and cost-effective way of protecting crops; using agroforestry, intercropping and crop rotation, which bring nutrient diversity to fields and ensure continued and improved production yields in a natural way; maintaining forests and using forest foods; using natural fertilizers like manure; and using natural pollinators like bees, which, according to a recent study, could increase fruit yields by 5%. These alternatives are cost-effective: the project in Zambia cost only $207 per person. Similar projects in Uganda and Mozambique cost just $14 and $120 per person, respectively.

A ray of hope

The most pessimistic forecast about the impact of climate change suggests that Africa may lose 47% of agricultural revenue by 2100, while the most optimistic predicts a loss of only 6%. The latter scenario depends on the assumption that climate change adaptation practices and infrastructure are already in place. But the difference between 6% and 47% is huge, which itself is a strong argument for investment in adaptations that will unlock Africa's vast natural resources. Analysts believe that if Africa is to fortify agriculture and curb hunger, it will need to work with the natural environment, making it more resilient and productive under climate change.

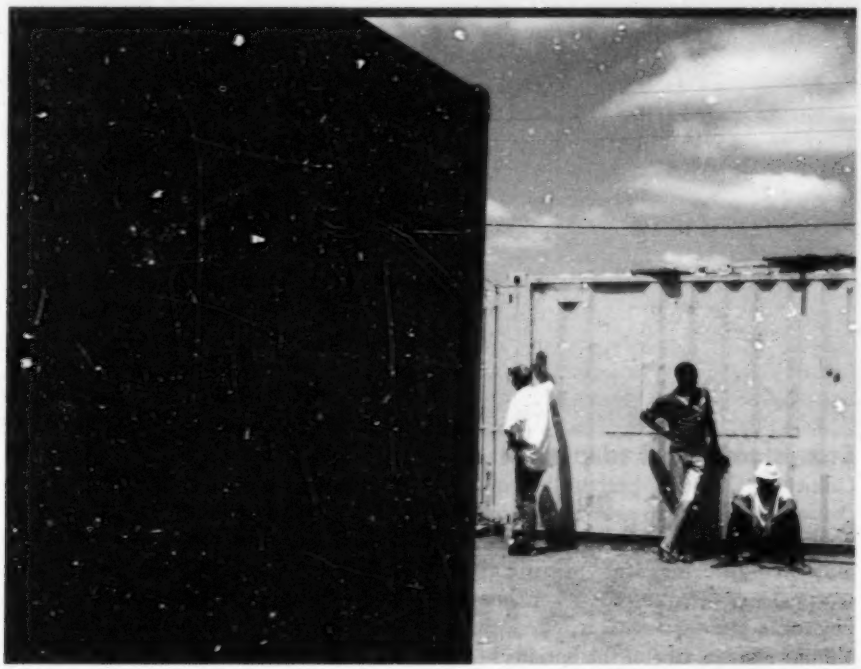
The changing climate does not have to mean greater food insecurity in Africa. Many communities across the continent are already building resilience by stimulating their existing ecosystems and available natural resource bases. Building on such good practices, and properly managing the unavoidable effects of climate change, will unlock Africa's potential to feed itself. The future need not be a future of want.

Dr. Richard Munang is UNEP's Africa regional climate change co-ordinator. He tweets at @MTingem.

Jesica Andrews is ecosystem adaptation officer with UNEP's Regional Office for Africa.

Denting youth unemployment through agriculture

By **Busani Bafana**



Unemployed young men in Mamelodi, South Africa wait for an offer of casual labour next to businesses that are trading out of converted shipping containers. Panos/Graeme Williams

Agriculture is not glamorous. It suffers from entrenched negative perceptions. In the minds of many African youths, a farmer is someone like their parents, doing backbreaking labour in the fields and getting little to show for it. Nonetheless, agriculture is the engine driving many African economies. If it were to get the same political support and financial investment as the mining sector, agriculture would be capable of providing more decent jobs and filling millions more stomachs with nutritious meals.

Francisca Ansah, an extension officer with expertise in agriculture and rural services, works with farmers in the Upper West region of Ghana. At a farmers' conference in Ghana last year, she said the image of poor, ragged and weather-beaten farmers puts off many young people. Having seen their aging parents go through the traumatic experience of farming using basic equipment, these young people opt to settle in urban areas in search of employment. "Young people have second thoughts about agriculture as the source for jobs," said Ms. Ansah.

Despite the negative perceptions, the agricultural sector employs as much as 60% of Africa's labour force, according to the *Africa Economic Outlook Report 2013*, published jointly by the African Development Bank, the Organisation for Economic Co-operation and Development and the UN Development Programme. Yet because of low productivity, the sector accounts for only 25% of the continent's gross domestic product (GDP).

Despite such grim statistics, the sector has huge potential. The World Bank estimates that African agriculture and agribusiness could be worth $1 trillion by 2030. For that to happen, there must be improvements in electricity and irrigation, coupled with smart business and trade policies. An agribusiness private sector working alongside government could link farmers with consumers and create many jobs.

Jobs for young people

Fast-growing economies that can cut poverty and create meaningful jobs, particularly for youths, require political will from leaders and huge injections of investment in agriculture, according to Professor Mandivamba Rukuni, a Zimbabwean researcher and land policy analyst. "Africa is still on average 60% rural in population. The African Union has defined the immediate future around agriculture as the main force in social and economic transformation of the continent," says Professor Rukuni, who has published widely on African agriculture.

"Africa's economies have been growing sustainably since 1999; agriculture has also been growing, but at a slower rate," he says, adding that the continent has been the slowest region in its efforts to eradicate poverty. He emphasizes the need for governments to focus on adding value to agriculture and to form partnerships with the private sector and set joint targets. On how governments and the private sector could work together, Professor Rukuni says, "Look at China, India and Brazil: there is no distinction between government and private sector."

Africa's lack of competitiveness in agriculture is a drag on efforts to boost employment in this sector. Professor Rukuni describes competitiveness as involving "what the government is prepared to do to support its producers to gain access to their markets." His solutions include boosting rural development through a chain of activities that add

value to agricultural products, providing necessary infrastructure to stem urban migration and empowering women and youths to run small businesses.

Huge potential in rice production

Marco Wopereis, deputy director general at the Cotonou-based Africa Rice Centre in Benin, says innovations in agriculture could unlock vast employment opportunities. The rice sector alone has the potential to employ many of the 17 million young people who enter the job market in sub-Saharan Africa each year. With financial support and training programmes, young rice farmers could boost rice production and add value to it, said Mr. Wopereis in an interview with *Africa Renewal*. "With so many people without a job, the rice sector in Africa is a golden opportunity to provide jobs."

Many experts have expressed alarm over Africa's growing youth unemployment. Ibrahim Mayaki, chief executive officer of the New Partnership for Africa's Development (NEPAD), the African Union's development agency, calls youth unemployment a "time bomb." Sub-Saharan Africa's youth population is increasing rapidly, with the 15- to 24-year-old age group at 200 million, a figure that is expected to double by 2045, according to population experts. But agriculture could potentially provide enough food and jobs.

In a 2013 report, *Agriculture as a Sector of Opportunity for Young People in Africa*, the World Bank added its voice to data by other organizations showing that agriculture is Africa's largest employer and has the potential to absorb millions of new job seekers. According to the report, increased focus on agriculture could enhance productivity, reduce food prices, increase incomes and create employment. Young people's involvement in this process is crucial. "Although farming is now often done by the elderly, the profession's requirements for energy, innovation, and physical strength make it ideally suited for those in the 15 to 34 year-old age range; that is, 'the mature young,'" notes the Bank.

The consensus among experts is that for agriculture to create high employment, young people must get involved. Strive Masiyiwa, chair of the board of the Alliance for a Green Revolution in Africa (AGRA), a continental body involved in assisting small-scale farmers across Africa, says it is possible for agriculture to be both more productive and hip enough to attract young farmers. "My vision is that the smallholder farmer may still work the land...they will be using new seeds, fertilizers, modern methods; they will be young, they will be skilled and have cars outside their houses and market information on prices of their produce." Agriculture has to be dynamic and profitable to attract youths, he adds.

Uneasy road

To support this vision, AGRA is mobilising 450 farmers' organisations in 14 countries to give smallholder farmers market access and bargaining power for their produce. Thousands of such farmers in African countries where AGRA operates already have easy access to improved seeds of staple crops, fertilizers, markets, and finance are reaping the benefits of improved soil and water management. In Burkina Faso, Mali and Niger, for example, 295,000 farmers have been trained in fertilizer micro-dosing (the process of applying small doses of fertilizer on crops) and ways to improve the soil and the yield of food staples such as sorghum. The hope is that as these farmers scale up their activities, thousands of the unemployed will find jobs.

Over the years Africa's agriculture has travelled a bumpy road. Obstacles have included the global economic crisis, food price spikes, climate change, poor harvests, and poor storage facilities during times of plenty. The result has been the failure of agriculture to generate high job numbers and make a big dent in poverty.

The African agricultural plan known as the Comprehensive African Agriculture Development Programme (CAADP) is intended to bring about jobs, large economic gains, a reduction in hunger and, through increased productivity, a reduction in food imports. Under CAADP, which was adopted in 2003, African leaders committed to allocate at least 10% of their national budgets to agriculture and rural development.

From agenda to reality

Of Africa's 54 countries, only nine including Burkina Faso, Malawi, Mali, Ethiopia, Niger and Guinea have to date invested 10% of their national budgets in agriculture. But Africa has huge agriculture potential. The World Bank estimates that the region has more than 50% of the world's fertile and unused land. Sub-Saharan Africa alone has some 24% of the world's land with rain-fed crop production potential. Besides, foreign direct investment in African agriculture is forecast to grow from less than $10 billion in 2010 to more than $45 billion in 2020.

A robust agricultural sector is necessary for sustained economic growth and high-paying jobs in Africa, according to the International Labour Organization. Making it a reality is a major task for the next 10 to 20 years.

By the numbers

200 million
Sub-Saharan Africa's youth population aged 15 to 25

$45 billion
Growth forecast of African agriculture by 2020, up from $10 billion in 2010

9
The number of Africa's 54 countries that have to date invested 10% of their national budgets in agriculture

17 million
Number of African youth who enter the job market every year

24%
Share of Sub-Saharan Africa as a percentage of the world's land with rain-fed crop production potential

Sources: Economic Commission for Africa, World Bank, NEPAD

Zimbabwe's farmers struggle to feed the nation

By **Ish Mafundikwa**

Many farm workers in Zimbabwe have been put out of work due to the closure of large-scale commercial farms. Africa Media Online/David Larsen

$2bn

Estimated amount the Zimbabwean government must inject into the agricultural sector to meet the country's food shortfall

Zimbabwe needs 1.8 million tonnes of the staple maize every year to meet the needs of its people and livestock. Only 798,500 tonnes were produced during the 2012/13 agricultural season. As a result, the country that was once dubbed "the breadbasket of the region" has to make up the deficit with imports and look to donors for food aid. After last year's harvest, the World Food Programme, the UN food aid agency, forecast that an estimated 2.2 million people—equal to a quarter of the rural population—would need food assistance, from October 2013 through the early months of this year.

The size of the maize harvests may vary, but this has been a familiar story since 2001, the last time Zimbabwe produced enough maize to meet its needs. Zimbabwe's transformation from exporter to importer of food is blamed by some analysts on the land reform programme launched in 2000, which saw white commercial farmers lose farms to landless blacks who are said to lack the skills to farm at the same level as the previous white owners.

However, closer scrutiny reveals a more complex picture. According to the Commercial Farmers' Union (CFU), the body that used to represent white farmers but is now open to all commercial farmers in Zimbabwe, up until 2001, a year after the launch of the "fast track" land reform, small-scale farmers produced the bulk of the country's maize harvest. "Of the average 2 million tonnes of maize that used to be produced, more than half was grown by the [black] small-scale farmers," says Richard Taylor, a CFU spokesperson. In 2001, small-scale farmers produced 1.2 million tonnes while the mostly white large-scale commercial farmers produced 800,000 tonnes. Over the years the commercial farmers' contribution was consistent, as they irrigated their land, while that of the small-scale farmers depended on the vagaries of the weather.

Taylor blames a lack of financial support for the sector's poor performance. He suggests the introduction of a scheme for small-scale farmers whereby they can borrow what they need from seed or fertilizer

companies. "The farmers can pay back when they sell their crop and the loans should be guaranteed by the government." He also sees land rights as an answer. "Farmers should have security of tenure so they can use their land as collateral when they apply for loans." He describes the small handouts of seed packages and fertilizers given to vulnerable farmers by the government and nongovernmental organizations as unsustainable.

A senior official in the ministry of agriculture echoed Taylor's sentiments. Speaking on condition of anonymity, he told *Africa Renewal* that a lack of support is not the only factor contributing to the country's inability to produce enough to feed its own people. "People in certain areas of the country should not bother growing crops, as their land is not good enough and rainfall is erratic," he said. The government divided the country into five agro-climatic or natural regions, depending on the rainfall each region receives. Crop production progressively deteriorates from one region to the other.

The official said that in the absence of irrigation, the best plan would be to get farmers to specialize in what works in their areas. He gave the example of drought-prone Beit Bridge in the southern part of the country, where farming is not profitable. "Even if they change to drought-tolerant small grains such as sorghum or millet, rainfall is so erratic in such places that those small grains may not survive the heat. They should focus on their cattle and goats, which they can sell to buy food," he said. He added that the government was aware of this, but suspects it is reluctant to encourage the switch as it might have negative political ramifications. The people who have been growing maize, the staple for most Zimbabweans, may be less inclined to change their farming patterns.

Dr. Sam Moyo of the African Institute of Agrarian Studies also expressed concern over the lack of support for food production. "The only way food production can be improved is through subsidies," he said, citing the example of Zambia, where subsidies have led to an increase in food production. Ironically, Zambia used to import grain from Zimbabwe.

Deputy agriculture minister David Marapira agrees that irrigation would go a long way towards ensuring increased productivity. "There are so many dams all over the country, but we are not making use of that water," he told *Africa Renewal*. The sad truth, however, is that Zimbabwe currently has less land under irrigation than at the beginning of the land reform programme.

Last year the *Herald*, a government-owned daily newspaper, quoted Conrade Zawe of the department of irrigation in the ministry of agriculture as saying that about half of the 250,000 hectares of land under irrigation in 2000 were being irrigated in 2013. The government allocated $250,000 for the maintenance of irrigation schemes in 2013, but up to November of that year a measly $36,000 had been disbursed. The 2014 budget announced last December sets aside $138,000 for the same purpose. But analysts are not holding out too much hope; they point to the difference between what the government has said will be spent and what it has actually disbursed.

Paul Zakariya of the Zimbabwe Farmers Union says only a total revamp of the agricultural sector will bring about a return to the days when Zimbabwe produced enough to feed itself, and agriculture contributed some 40% of the country's foreign currency earnings through exports. "What we need is agricultural finance that is packaged properly for agriculture in the various sectors, communal, small-scale commercial, large-scale commercial, and we'd also want to look at not only working capital but investments in infrastructure, like irrigation, like the feeder roads...."

Analysts say the government has to inject as much as $2 billion to get Zimbabwe's agricultural sector producing enough to meet the country's own needs. Yet because of the country's dire economic situation, only $155 million was allocated to the Ministry of Agriculture in the $4.4 billion 2014 national budget. The ministry had requested $490.5 million. Prince Kuipa, chief economist with the Zimbabwe Farmers Union, pointed out that the amount is a mere estimate; going by past experience, the ministry is unlikely to get the total amount.

To make matters worse, commercial banks are refusing to give loans to farmers, dismissing as "unbankable" the 99-year leases they offer as collateral. The bankers argue that they cannot repossess the land in case the farmers default, because, in their present form, the leases give farmers the right to farm but not ownership of the land because the land officially belongs to the state.

The 2014 budget forecasts a harvest of 1.3 million tonnes of maize, but there is widespread skepticism: even if the country has a good rainy season, farmers lack the cash to purchase what they need to produce enough to feed Zimbabwe.

Zimbabwe at a glance

12.8 million Population, mid-2011

US$9.7 billion Gross Domestic Product

Structure of the economy (% of GDP)

15.7%	Agriculture
36.9%	Industry (**17.1%** Manufacturing)
47.4%	Services

Source: World Bank (2011 figures)

Malawi has gone from bountiful maize crops to renewed uncertainty: Strong, democratic leadership and sound policies are essential for ensuring food security. Africa Media Online/South Photos/Graeme Williams

What went wrong? Lessons from Malawi's food crisis

Autocracy and aid dependency killed an agriculture success story

By **Masimba Tafirenyika**

In 2012 Malawi found itself in a tight spot, again. A food crisis set off by erratic rains, rising food prices and economic hardships slowly unfolded. For the first time in several years, the country's ability to feed its citizens was at risk. Sadly and unexpectedly, Malawi lost its hard-earned status as an agricultural success story — it used to produce enough maize for its people to eat and still provide a surplus to neighbours. Many wondered what went wrong and whether there could be lessons for other African countries.

More than 1.63 million people, or 11% of the population, faced severe food shortages in 2012, according to the World Food Programme, a UN relief agency. Malawi needed $30 million to the end of that year to cover the shortfall. Agriculture is the backbone of its economy: four in five people rely on it for income. Most farmers plant on small plots by hand with little irrigation, and therefore are vulnerable to recurring droughts, notes the UN Food and Agriculture Organization. Malawi is home to Africa's third-largest freshwater lake — Lake Malawi — yet less than 3% of the land is irrigated.

Malawi's troubles might seem surprising. Yet to those who follow events in the tiny, poor and densely populated landlocked Southern African nation, it is less an abrupt change in fortunes than a series of self-inflicted injuries unfolding in slow motion.

Increased farm subsidies

Back in 2004, President Bingu wa Mutharika, who died in office in early 2012, rode into power on a promise to increase farm subsidies as part of his Farm Input Subsidy Programme. Under the plan, the government gave subsidy vouchers to "smallholders to buy a small amount of fertilizer and seed so that they could replenish the soil nutrients, take advantage of improved seed varieties and at least achieve a livable crop from their tiny farms," says *Africa Confidential*, a UK-based newsletter. The vouchers were redeemable

1.6mn

people, about 11% of Malawi's population, faced severe food shortages in 2012

for seeds and fertilizer at about one-third of the normal cash cost.

The results were instant. In 2005, a year after expanded subsidies kicked in, Malawi harvested a grain surplus of half a million tonnes. In subsequent years it exported grain to Lesotho and Swaziland, as well as 400,000 tonnes of maize to Zimbabwe. Food experts and advocacy groups took turns at international forums extolling Malawi as an example of Africa's "green revolution." Exploiting his new-found success, President Mutharika called on other African leaders to embrace his policies. Now the tables have turned, and Malawi is facing severe food shortages.

Ironically, even during the years of plenty, Malawi continued to import large quantities of wheat, maize and other cereals, says FAO, and isolated pockets of hunger remained. In pursuing subsidies, Mutharika defied donor critics who alleged that the programme was riddled with corruption, ran counter to the principles of free markets and was unsustainable. Indeed, by 2009 the government was spending 16% of its budget on subsidies.

Over time President Mutharika became autocratic, amid charges of corruption and cronyism. In 2009 he spent more than $20 million on a long-range presidential jet. Worse, he started promoting his brother Peter, then foreign minister, as his successor, further alienating donors, on whom Malawi depends. As the donors abandoned him, the economy tanked and protesters took to the streets, leading to political instability.

Leadership is key

Now that a previously successful experiment with an "African green revolution" is unravelling, what are the lessons for others? With a population of more than a billion and counting, will Africa ever be able to produce enough food for its people? The answer to that question is a qualified yes. But for it to happen, certain conditions must exist.

First, an essential ingredient for success in agriculture is strong political will at the highest level. In his book "The New Harvest: Agricultural Innovation in Africa", Calestous Juma, a Harvard University professor originally from Kenya, argues that African leaders should make agriculture a key element of all major economic decisions.

Rhoda Tumusiime, the head of agriculture at the African Union Commission, agrees. She notes that while success in agriculture does not have many drivers, leadership is crucial. "There must be a key political champion at head-of-state level to steer and champion a vision on agricultural revolution," she told the Economic Commission for Africa.

Mr. Mutharika not only had the political will, but tried to lead by example. And his anti-poverty policies attracted many advocates. The director of the New York-based Earth Institute at Columbia University, Jeffrey Sachs, who has worked closely with Malawian authorities to fight poverty, is among them. "We should ... remember a positive legacy of the late President Mutharika, because that legacy holds a key for Africa's future development and escape from poverty," Sachs wrote in an op-ed in the *New York Times*.

"Until his final two years, Mutharika had actually engineered an agriculture-led boom in Malawi, one that pointed a way for Africa to overcome its chronic hunger, food insecurity, and periodic extreme famines," said Sachs. He credited the late president for standing "bravely against the arrogance of an ill-informed foreign aid community back in 2005."

Food security equals national security

Second, while foreign aid is critical in feeding the hungry and reviving agriculture in Africa, food security is too important to be left to the generosity of external partners. Food security requires the same seriousness and resources as national security, if not more. In fact, national security loses its legitimacy if thousands of citizens die not from enemy firepower but from starvation, or risk their lives crossing borders while fleeing from hunger.

And finally, Africa needs a strong food policy backed by resources from African Union members, to be invested in institutions that promote agriculture. One tangible AU response has been the Comprehensive Africa Agriculture Development Programme (CAADP), which requires countries that sign up to it to spend at least 10% of their national budgets on agriculture. CAADP itself has a very small budget, but it uses the little it has to strengthen agricultural institutions and build teams of skilled personnel who roam the continent sharing best practices with national authorities.

"There is no doubt that African agriculture needs strong local institutions to avoid the kind of bubble that we saw in Malawi, which was largely driven by external energy," Martin Bwalya, the head of CAADP, told *Africa Renewal*, alluding to Malawi's dependence on donors for its short-lived success. CAADP, which is run by the New Partnership for Africa's Development (NEPAD), the AU's development agency, recognizes that Africa needs institutions whose effectiveness and shelf-life do not depend on the survival of individuals.

Mr. Mutharika tried to follow the path of subsidies and largely succeeded. Countries that have pursued Malawi's lead have "achieve[d] breakthroughs in farm yields and food production for the first time in their modern history," said Professor Sachs. Mr. Mutharika's successor, Joyce Banda, one of Africa's three female presidents, now has to formulate a new food policy, woo back the donors, stabilize the economy and get agriculture back on track.

To boost African agriculture, governments need to invest 10 per cent or more of their budgets in the sector. *Africa Media Online/Eimage Agency/Brandon Fisher*

Kuapa Kokoo farmers Mama Kasim and Aseatu Bawa splitting cocoa pods. Kuapa Kokoo is a cocoa farmers' co-operative with 45,000 members spread across the forests of Kumasi, Ghana. Panos/Aubrey Wade

Fighting African poverty, village by village

In Ghana, agriculture is central to project focused on achieving Millennium Development Goals

By **Ernest Harsch**

Standing in the midst of a freshly planted maize field, Bright Osei Kwaku recalls that some twelve months earlier he more than doubled his output with the help of improved seeds, fertilizer and advice on farming techniques. Altogether, his two to three acres yielded about 15 100-kilogramme bags of maize, compared with just six bags the year before, when he had no such support.

Many other young Ghanaians have either left agriculture or dream of doing so. But Mr. Kwaku, 25 years old, thinks he can stay on the land. "I will continue to farm," he told *Africa Renewal*. "I got income and food. I got enough from the farm."

With world food prices constantly fluctuating, it is a good time to push for higher production, argues Isaac Kankam-Boadu, the agriculture and environment facilitator of the Millennium Villages Project in Bonsaaso, a cluster of poor and

remote settlements in Ghana's Ashanti Region. "High food prices are an opportunity," he says. "The farmers can earn more money."

In 2007, Mr. Kankam-Boadu reports, Bonsaaso's maize farmers managed to quadruple their yields from an average of about one tonne per hectare (two and a half acres) to four tonnes. Besides boosting their own incomes, the farmers contributed about a tenth of their crop to the area's new school feeding programme, which helps many of the area's children.

Millennium Villages

Such linkages are at the heart of the Millennium Villages Project. The first Millennium Village was launched in 2004 in Sauri, Kenya, as an integrated development initiative. Besides Ghana, the project soon expanded to also include villages in Ethiopia, Malawi, Mali, Nigeria, Rwanda, Senegal, Tanzania and Uganda. The sites were selected on the basis of their poverty indicators and to represent Africa's different ecological and climate zones. Altogether, more than 400,000 people now live in villages chosen for the project.

The idea grew from research and policy deliberations of the Millennium Task Force, directed by the UN Secretary-General's special adviser on the Millennium Development Goals (MDGs), Jeffrey Sachs. The MDGs, adopted by world leaders in 2000, strive to drastically reduce poverty and deprivation around the world.

The Millennium Villages approach is based on two central ideas: The first is that simple and inexpensive changes in nutrition, health, water, sanitation, education, women's status, agriculture, communications, roads and electricity can lift rural Africans out of severe poverty. The second is that a combination of community mobilization, government support and external aid can fund these efforts for only about $110 per person per year. Most of the Millennium Village projects are being implemented by the UN Development Programme (UNDP).

From school meals to cell phones

The Millennium initiative came to Bonsaaso in March 2006, initially in 10 localities. By the end of that year the project had expanded to 30 communities, covering some 400 square kilometres and affecting more than 30,000 people. The area was selected because many residents were very poor, malnutrition was common, there were few health services, many children did not go to school and numerous other indicators of human development lagged.

Rather than focusing on just one or two sectors, the project's designers want to show that poverty can be attacked across a wide front. If successful here and in other countries, says Sam Asare Afram, the former Millennium Village manager in Bonsaaso, the project could provide a "model" for the continent.

In 2008, two years after the start of the project, communities in Bonsaaso were already enjoying real results. Mohammed Salifu, a cocoa farmer, produced nine 64-kilogramme bags in 2007, up from just four the year before, simply by following the advice of an agricultural extension officer sent to Bonsaaso by the ministry of food and agriculture. With new seedlings of a higher-yielding and faster-growing variety of cocoa, he hopes to do even better this year.

> **"If you want to eradicate poverty, you need infrastructure.**

Bigger cocoa and food harvests will bring new challenges, however. The abysmal state of the roads within Bonsaaso and with other parts of Ghana makes it hard for farmers to get their crops to market. But Chinese road contractors hired by the government are busy at work, and the project has acquired two five-tonne trucks to help transport produce. Developing physical infrastructure is not one of the MDGs, notes Ernest Mensah, a project facilitator. "But if you want to eradicate poverty," he adds, "you need infrastructure."

Avoiding dependency

Critics of donor-aided development projects in Africa point out that they often tend to make the beneficiaries dependent on outside assistance, and frequently collapse if that money eventually dries up. The Millennium Villages Project does rely on significant inflows. On average, about 60% of project financing comes from donors, 30% from national and local governments and the rest from the communities themselves.

In part, the project is designed to convince donors to provide more financing over the long term, by demonstrating concretely that aid can be used effectively to reduce poverty. By showing that external aid can indeed be effective in Africa, Mr. Sachs and his colleagues hope to convince the major industrialized countries to live up to their commitments.

To help guard against local expectations that such outside assistance will continue to keep the Millennium Villages functioning, project planners stress that certain forms of aid will be steadily reduced and that governments and villagers will need to take up a greater share of the cost. The new higher-yielding cocoa seedlings provided to farmers are currently subsidized, notes Mr. Kankam-Boadu. But as farmers they earn more from their cocoa sales.

In various ways, project organizers are encouraging national and local government bodies to expand their presence in Bonsaaso: by building roads, extending electricity connections and sending in more teachers, health care workers and agricultural extension advisers.

Building up community institutions and a spirit of self-help are also vital for long-term sustainability. Local residents regularly participate in the construction of new schools, teachers' quarters, clinics and community centres by providing labour and contributing sand, stones, timber and other construction materials.

The project employs several "facilitators" to help strengthen school management committees, parents' associations, water committees and other bodies, and to engage traditional chiefs, who play a major role in mobilizing people. Stephen Antwi, the project's community development coordinator, told *Africa Renewal* that community structures will help Bonsaaso keep developing even when outside aid eventually falls. "We'll likely have the capacity for many years."

Boosting African farm yields

More fertilizer, irrigation and other inputs are vital, says NEPAD

By **Michael Fleshman**

A plant health clinic on market day in the village of Wangigi, Kenya. Farmers visiting the market can come to see a plant pathologist and show samples of their crops. Panos/Sven Torfinn/CABI

For tens of millions of people in rural Africa, life has gotten harder in recent years. Reliant on erratic rains, working exhausted soil and hobbled by decades of underinvestment and neglect, many have sunk deeper into poverty as agriculture — the mainstay of the region's economy — continues to face neglect. A growing number of African governments and UN and non-governmental agencies argue that unless urgent efforts are made to raise crop yields, build transportation and marketing systems and adopt modern, sustainable farming methods, the continent will fail to reach its development goals and the rural majority will reap only meagre harvests.

It is difficult to overestimate the importance of agriculture to Africa's economic prospects. Some 65% of Africa's labour force is engaged in agriculture, and the sector accounts for about 32% of the region's GDP, according to the Alliance for a Green Revolution in Africa (AGRA), an independent organization advocating for improvements in Africa's agriculture. According to the Food and Agriculture Organisation (FAO), growth in sub-Saharan agriculture employment accounted for half of all employment growth between 1999 and 2009.

In recognition of its importance, proponents of the continental development plan, the New Partnership for Africa's Development, released NEPAD's Comprehensive Africa Agriculture Development Programme (CAADP) in 2003. Its goals are ambitious — to allocate at least 10% of national budgets to agriculture, to reach rural growth rates of 6% annually by 2015, integrate and invigorate regional and national agricultural markets, significantly increase agricultural exports, transform Africa into a "strategic player" in global agricultural science and technology, practice sound environmental and land management techniques, and reduce rural poverty.

'Mined of life'

However, the challenges to success are as large as the potential consequences of failure. The UN's World Food Programme estimates that more than 55 million Africans were in need of international food aid in 2012. Since 1993, according to researchers for the African Union, annual population growth has outstripped food production on the continent, resulting in a rise in the number of hungry people.

One important obstacle to increased productivity has been the steady deterioration of Africa's soils, noted Mr. Amit Roy, the head of the International Fertilizer Development Centre (IFDC), a US-based institute that promotes agricultural advancement in developing countries. "When farmers plant the same fields season after season and cannot afford to replace the soil nutrients taken up by their crops, the soil is literally mined of life," he says.

An estimated 8 million tonnes of nutrients are depleted annually. Replenishing the nitrogen, potassium, phosphorus and other minerals absorbed by plants is therefore vital to keep crop yields from declining. Part of the answer lies in better farming methods, including expanding the range of crops grown, improving soil conservation practices and utilizing improved seeds and technology. But the key to launching a "revolution" in African agriculture, Mr. Roy told *Africa Renewal*, is much greater use of fertilizer.

"Traditionally, African farmers use the slash-and-burn method," he said. "They burn off a section of land and farm it for a season or two, then clear another plot and leave the old field fallow." But population increases and growing land shortages have forced farmers to cultivate the same fields repeatedly, stripping the land of nutrients and resulting in

smaller harvests and less income. Such pressures have also led farmers to clear land poorly suited for cultivation, which contributes to soil erosion and yields only marginal increases in harvests. An estimated 50,000 hectares of Africa's forests and 60,000 hectares of savannah are lost to such methods annually – resulting in severe environmental degradation and contributing to the decline in agricultural production per capita.

According to the CAADP, African farmers currently use far less fertilizer than their counterparts in other regions of the world. "A strong relationship exists between the level of fertilizer use and cereal yield," notes the programme.

High costs, short supply

Heavy reliance on imported fertilizers, combined with high transportation costs and the absence of suppliers in the countryside, has meant that African farmers pay between two and six times the average world price for fertilizer. With millions of African family farmers surviving on less than a dollar a day, imported fertilizer is simply unaffordable.

Yet evidence suggests that even modest increases in the use of fertilizer – whether nitrogen, phosphorous or potassium – can have dramatic results. In Ethiopia, one study found that just one bottle cap's worth of chemical fertilizer on each plant increased millet yields exponentially. The technique, known as "micro-dosing," is regarded as particularly appropriate for Africa's small-scale farmers, because it reduces costs and avoids damage to fragile soils from excessive chemical use.

Citing the potential environmental risks to African soils and water sources from too much chemical fertilizer being applied to farms – as sometimes happened during Asia's "green revolution" – proponents of sustainable agriculture in Africa argue that farmers should use more animal manure, compost and other organic fertilizers. If farmers better integrate stock-raising with crop cultivation, cattle and other livestock could provide them with not only more manure but also with animal traction for ploughing fields and hauling crops after they are harvested.

While organic fertilizers are important, agrees Mr. Roy, he points to a serious limitation. "The quality of animal manure is dependent on the quality of the food the animals are fed." With much soil severely depleted, he says, "the fodder contains little of the nutrients needed by crops." Organic fertilizers alone "are simply not the answer to the crisis of Africa's soil fertility. We need to increase the use of both organic and chemical fertilizers."

The CAADP makes the same point. Under the new, integrated approach to African agriculture advocated by NEPAD, "mineral fertilizers and organic matter are treated as complements rather than substitutes."

One way to make chemical fertilizers more available and affordable is to increase local production. This can reduce costs, ease the pressure on foreign currency reserves and shorter the supply chain to farmers. Although Africa consumes only about 1% of global fertilizer production and currently produces even less, prospects for the commercial manufacture of fertilizers are good. Nitrogen is among the most common elements on earth, but converting it into use for plants is energy-intensive. West Africa's vast and largely untapped natural gas resources, notes Mr. Roy, therefore make the region ideally suited for the manufacture of nitrogen fertilizer. Africa also has ample deposits of phosphorus and already exports the mineral to Chinese and Indian farmers. If these minerals can be utilized in local production, Africa would need to import only potassium fertilizer.

But investment in fertilizer production will only come in response to increased demand from farmers, Mr. Roy asserts. Persuading Africa's family farmers that purchasing fertilizer is worth the money and effort will require significant improvements in rural transport networks and infrastructure, an expanded network of rural farm suppliers and markets, and greater financial returns, including protection from price fluctuations and subsidized Northern competitors.

Fertilizer no 'silver bullet'

"Fertilizer is not a silver bullet for Africa's agricultural problems," Mr. Roy admits. "The fertilizer doesn't help if it arrives too late, or the crops aren't watered or you can't sell the harvest. Farmers know this. That is why CAADP is so important. It addresses the needs of farmers comprehensively."

In the face of erratic and unreliable rainfall in large swaths of East and Southern Africa, expanding the acreage of irrigated land is also urgent. Former UN Food and Agriculture Organization Director-General Jacques Diouf once complained to a group of African agriculture ministers that only a portion (around 4%) of sub-Saharan Africa's arable land is irrigated, compared with 38% in Asia. Although much of Africa has abundant water supplies, he further added, "the region uses less than 3% of its water resources, the lowest percentage of the developing world." NEPAD researchers have estimated the initial investment of irrigating 20 million more hectares of African farmland at $37 billion, with an additional $31 billion in operating costs through 2015.

Rebuilding rural supply networks and marketing systems so farmers have the means and incentives to produce more is another major challenge. Government-run agriculture marketing boards used to perform some of these functions, providing stable prices, credit extension services, improved seeds and technology to local farmers.

Mr. Roy says that expanding private sector involvement in rural marketing and supply activities is a long-term solution. But he acknowledges that high poverty rates in the countryside and the need for "public goods" like roads and markets give African governments a key role in creating incentives for private investment.

Finally, Mr. Roy observes, "Africa needs to do a better job in applying science and technology to agricultural problems, and getting those advances to the farmer more quickly." Here too there are encouraging signs.

Expanded and more effective extension services can also bring big dividends by improving land- and water-management techniques, introducing new techniques (such as rotating crops and mixing different crops on the same farm) and bringing scientific expertise and new technologies to farmers quickly.

"The African farmer is primarily a woman farmer," Mr. Roy concludes. "And she is a good farmer who can feed her family and her continent if she is given the tools and the opportunities to do so."

Sierra Leone: nursing agriculture back to health

By **Kingsley Ighobor**

A woman plants rice paddy seedlings in the Western Area Peninsula of Sierra Leone. Panos/Aubrey Wade

Sierra Leoneans love to eat rice. For them, rice is the food to live on. "It doesn't matter what other food they eat, they must eat rice at least once a day before they can say they have eaten at all," explains Umaru Fofana, editor of *Politico*, a Sierra Leonean newspaper. But now Joseph Sam Sesay, the minister in charge of agriculture, forestry and food security, wants his compatriots to loosen their relationship with rice. Over-reliance on it, Mr. Sesay believes, could affect the country's food security goal. "I encourage our people to change their habit and alternate rice with other crops grown in the country." By "other crops," the minister is referring to yams, cassava and sweet potatoes.

Mr. Sesay hopes that if people eat other food varieties, locally produced rice, of which there was about 693,000 tonnes in 2013, will be more than enough and there will be no need to import food. But Sierra Leoneans have simply shrugged off the minister's advice, as if to say, "Thanks, but no thanks."

Changing Sierra Leoneans' eating habits is a tough sell, but the minister draws inspiration from Nigeria and Ghana, two sister West African countries whose citizens used to consume plenty of rice but are now also eating a lot of cassava, yams, beans, potatoes and other foods. In Sierra Leone rice is also a high-voltage political issue. Voters usually favour candidates who promise to make rice easily available and affordable.

Looking at other crops

In a report for the Food and Agricultural Organization (FAO), Sierra Leonean researcher Ibrahim J. Sannoh notes that while agriculture accounts for close to half of Sierra Leone's GDP, local rice production alone contributes 75% of agricultural GDP. Sierra Leone's "annual per capital consumption of rice is amongst the highest in sub-Saharan Africa," states Mr. Sannoh.

Analysts believe that the minister is right to push for other crops. "Rice is Sierra Leone's staple food but the country's agricultural sector is largely subsistence and does not produce sufficient rice for domestic consumption, not to talk of export," reports *NewsWatch Sierra Leone*, an online publication. In 2008 the government created the Agenda for Change programme, setting itself a goal of food self-sufficiency and possible surplus for export.

Five years later, depending on who is doing the evaluation, progress is a glass either half empty or half full. *NewsWatch* grumbles that "more than 60% of rice consumed in the country is still imported from abroad." The World Food Programme (WFP), the UN organ that fights hunger, reported last year that households in Sierra Leone spend "on average 63% of their total expenditure on food" while about 52% of the population borrows money to buy food.

Poverty still a problem

Sierra Leone's broader poverty picture is not pretty either. Nearly 53% of the population lives on less than $1.25 a day,

according to the World Bank. The UNDP Human Development Index, which evaluates countries based on life expectancy, education and income, ranked Sierra Leone 177 out of 187 countries in 2013. UNICEF reported last year that about 34% of the population is physically stunted due to malnutrition. The situation is particularly dire in Moyamba, Pujehun and Kenema districts—some of Sierra Leone's bigger regions.

Inadequate infrastructure is a major impediment in the march towards food security. Erratic electricity supply and bad roads affect farming, reports WFP. "Consumers too are negatively affected by poor infrastructure and floods during the rainy season."

Nevertheless, Minister Sesay boasted last year that rice production has increased by 35%, and cassava and sweet potato production by 34%, while palm oil, coffee and cocoa have also seen an upswing. Andrew Keili, a development expert who regularly consults for the World Bank, supports efforts to diversify agriculture. In a blog post, Mr. Keili agreed that eating foods other than rice will help food security efforts. However, he stressed that "some of these alternative foodstuffs may be affordable for fairly affluent urban dwellers to buy...but may be beyond the reach of poor people." Citing a WFP report, he argued that with inflation at about 13%, poverty is the main cause of food insecurity.

CAADP's role

The silver lining is the ongoing decrease in the amount the government is spending annually on food importation, which dropped from $32 million to $15 million between 2007 and 2013. World Bank data appear to support the minister's assertion that progress is being made. For example, between 2007 and 2013, rice production increased steadily from 370,000 tonnes to 693,000 tonnes. Despite such increases, Sierra Leone's agricultural sector is growing at 5.3%—shy of the 6% target set by the African Union in 2003 when it adopted the Comprehensive African Agricultural Development Programme (CAADP).

On signing the CAADP Compact in September 2009 to demonstrate his commitment to agriculture, President Ernest Koroma declared, "This is an important historical moment not only for Sierra Leone, but for Africa as a whole. We regard CAADP as being pivotal to our poverty and hunger eradication efforts."

Yet Ibrahim Mayaki, head of the New Partnership for Africa's Development (NEPAD), did not list Sierra Leone among the six countries that have met or surpassed the recommended 10% budget allocation for agriculture. Those countries are Burkina Faso, Ethiopia, Malawi, Mali, Niger and Senegal. Rather, Sierra Leone is in the category of countries whose agricultural budgets are oscillating between 5% and close to 9% of the national budget.

Progress

Mr. Mayaki's report is not necessarily a criticism of Sierra Leonean government's efforts in agriculture; indeed, the country's current agricultural status is a far cry from what it was a decade or so ago. For most of the 1990s Sierra Leone was best known for its diamonds—and the devastating civil war that the scramble for those precious gems helped to sustain. During that period, the agricultural sector used to grow at less than 2%.

By 2001, when the war was ending, the country could produce only 186,000 tonnes of rice per year. Fast-forward to today, when the West African nation is tapping a different kind of wealth: the crops that can grow on its fertile land. A country that could barely feed its citizens not too long ago is now aspiring to self-sufficiency in food production.

Take Marie Kargbo, for instance, who cultivates rice on a six-hectare farm in Kambia district in northwestern Sierra Leone. She's been having bountiful harvests as a result of increased government support. "Before now, life for women farmers was very difficult," she told a reporter for the Inter Press Service news agency. "But now rice production has been fruitful, as we have been receiving supply from the government, ranging from seed rice [to] power tillers, fertilizers and pesticides."

The president's clarion call

The government reckons it can make agriculture even more worthwhile for farmers like Ms. Kargbo. To start with, it hopes to increase the agricultural budget to more than 10% of the national budget. This will translate to more farm implements, tractors, fertilizers and other materials that can help rural farmers. Already the government has phased the previous agenda into another dubbed the Agenda for Prosperity, to be implemented between 2013 and 2018. The new Agenda is expected to lay a foundation that will make the country middle-income within 22 years.

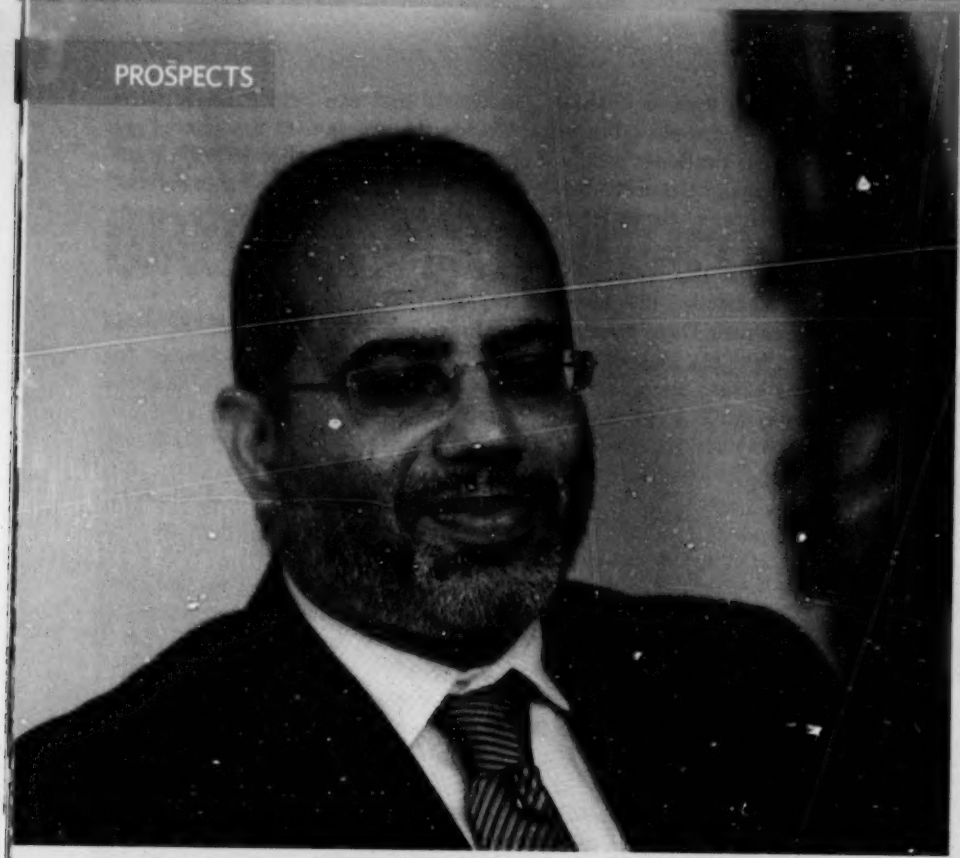
Referring to agriculture as "the defining aspiration in the Agenda for Prosperity," President Koroma announced last December that of the $5.7 billion to be used to implement the Agenda for Prosperity over the next five years, $1.6 billion will be invested in agriculture. That is about 35% of the total budget—far exceeding CAADP's target.

President Koroma envisions commercial agriculture, value addition and agro-processing. He sounded a clarion call last December: "For far too long we have been saddled with weak linkages between primary producers and consumers, ineffective land tenure systems, suboptimal electricity production, weak telecommunication networks." He pledged to overhaul the educational system to create "mindsets and skills for innovative application of science and technology" and hence attract investors to the agricultural sector.

The real "diamond"

A combination of factors could bring the dream of self-sufficiency in food production within reach. For example, rainfall, while erratic, has generally been sufficient. Mr. Sannoh's report lists other factors: Sierra Leone covers 72,300 sq. km, of which 5.4 million hectares (74%) could potentially be cultivated. The uplands represent 80% of arable land suitable for different food and cash crops. Even the lowlands, with higher fertility, can have high crop yields.

The president himself talked about land tenure reforms and the application of science and technology in agriculture. Ideas are pouring forth in torrents, and awareness of agriculture's role in socio-economic development is increasing. It's as though the scales have suddenly fallen off the eyes and Sierra Leoneans are beginning to believe that while the country's underbelly may store huge deposits of high-value minerals such as gold, diamonds, rutile and bauxite, the real "diamond" is its vast, fertile and uncultivated lands.



UN/ECA

Opinion

We need more agribusiness in Africa

By **Carlos Lopes**

Africa's economic performance over the last decade has been remarkable, having reached an average growth of 5%. If this growth is maintained, projections indicate Africa's GDP should increase approximately threefold by 2030 and sevenfold by 2050, outstripping Asia's. Yet this growth has not translated to creating jobs or tackling inequalities.

Beyond growth, the continent needs transformation. The internal, external and historical reasons that its industrial potential has not been reached can be attributed mainly to the failure of policies, often imposed. Colonialism has left behind institutions and an infrastructure base that were designed to enhance extraction of Africa's resources, as opposed to value addition. Economic structural adjustment programmes have also had negative effects on technological accumulation, human capital development and the performance of manufactured exports.

Agricultural production is one of the most important economic sectors in the majority of African countries. Approximately 75% of Africans rely on it for their livelihoods. History illustrates that agriculture, particularly the developed agribusiness and agro-industry sectors, has been the driver of economic growth in countries across the globe—for example, Brazil and China. In Africa, agribusiness and agro-industries account for more than 30% of national incomes as well as the bulk of export revenues and employment. Scaling up agribusiness could be the next growth frontier. It could offer immediate value addition through commodity-based industrialization that exploits forward and backward linkages with the rest of the economy. Such industrialization could lift many rural dwellers out of poverty while creating jobs across the economy.

Several key opportunities are within reach in agribusiness. The underlying premise of diversification of sources of growth should curb the pattern of over-reliance on primary commodities to generate export revenues. For example, 90% of the total income from Africa's coffee, calculated as the average retail price of a pound of coffee, after it is roasted and ground, goes to consuming countries. This clearly underscores the fact that continued dependence on the export of unprocessed soft commodities—as opposed to a focus on increased value addition—would likely adversely affect future growth in the region.

Overcoming existing challenges

Africa could exploit several opportunities to overcome existing challenges facing agribusiness. First, despite possessing the world's largest reservoir of unused arable land, about 60%, Africa has the lowest agricultural productivity, amounting to approximately 10% of global agricultural output. Cereal yields in Africa average only 1.2 tons per hectare, compared with more than 3 tons per hectare for Asia and Latin America and about 5.5 tons per hectare for the European Union. Ironically, Africa has been a net importer of agricultural products since the 1980s. The continent spends between $40 billion and $50 billion yearly on imported agricultural products. More importantly, Africa is exporting jobs by not being able to increase its value addition.

Africa can feed Africa. It is well endowed and has the markets. But it needs more than good technology policies. Scaling up productivity means tapping water resources for irrigation, providing stable prices while doing away with artificial subsidies, using seeds with better yields, providing basic transport infrastructure, providing incentives for financial institutions to invest in agriculture as much as in commercial farming, and developing a profitable and competitive

agribusiness sector. By drawing on lessons from other regions such as Asia, Argentina and Brazil, Africa can turn its fortunes around gradually.

Second, Africa's population growth has to be turned into an asset. By 2050, Africa's youths alone will constitute over a quarter of the world's labour force. Its middle class is rising. Urbanization, at 3.7%, is taking place at more than twice the global rate. Combined, and given their sheer magnitude and pace, these phenomenal trends present a rare and historical opportunity for rapid industrialization.

Agribusiness holds the key to meeting urban consumers' demand for food, particularly processed food. Emerging countries will also increase demand for Africa's farm commodities. There is vast potential for establishing production and trade links, as well as synergies between different actors along the entire agribusiness value chain (producers, processors and exporters), through the provision of incentives that bolster private sector investments and encourage the competitiveness necessary to meet consumer requirements for price, quality and standards. The shift from primary production to modern integrated agribusiness will provide lucrative opportunities to many smallholder farmers, the majority of whom are women, as well as generating modern jobs for the continent's youths.

Third, growing opportunities from investment in infrastructure will help overcome the current challenges associated with poor access between farm-level production and downstream activities, such as processing and marketing. This opens the door to increasing the production of higher agricultural value-added products while continuing to produce popular commodities such as coffee, tea, cocoa, cotton, livestock products, fresh vegetables and fruits. While regional integration is expected to help countries reach economies of scale, it should also help minimise high transaction costs associated with fragmented markets and price controls. As long as governments implement regional free trade policies such as abandoning export and import bans and removing non-tariff barriers, production for domestic markets will become increasingly attractive. This in turn should counter the effects of those existing tariff regimes that favour raw over processed goods.

Fourth, sustaining the continent's growth and overcoming current energy challenges is possible. African energy use per capita (which incorporates hydropower, fossil fuels and biomass) is currently only one quarter of the global average. Yet Africa's renewable energy potential is substantially larger than the current and projected power consumption of the continent. With abundant low-carbon renewable resources, a growing energy demand and falling technology costs, Africa has the opportunity to deliver economically competitive energy solutions for both remote rural and growing urban locales. And bringing power to rural communities will not only improve the quality of individual lives, but also help scale up agribusiness.

Fifth, rapidly changing demands and technologies mean that Africa can power its way through the technological revolution. For example, information and communication technology applications such as mobile banking solutions are playing an important role in connecting smallholder producers to buyers. Latecomer advantage can help leverage existing global knowledge towards strengthening the continent's own technological efforts, its know-how and its innovation capabilities. This would make the continent's agribusiness systems competitive.

Robust and enabling policies

A robust and enabling policy framework is urgently needed. It will help remove existing constraints on agro-industrialization and encourage investments. It should also include, but not be limited to, the following key components: a) ensuring that the right combination of agricultural, industrial and trade policies is in place to encourage sufficient production of raw material as well as the efficient distribution of produced products; b) ensuring that rights to land and natural resources are recognized and enforced to secure the transfer of rights to encourage productive use of land and boost investor confidence; c) pursuing new and alternative sources of funding such as sovereign funds and domestic resources, creating incentives for the private sector to make investments; and d) using public-private partnerships to finance agribusiness or facilitate capacity building through technical and entrepreneurial skills training.

Kenya's fresh vegetables firms have moved into high-value-added exports as a result of effective collaboration between the public and private sectors, and the strengthening of links between businesses and educational institutes. If Kenya did it, other African countries can do it as well. Lessons can also be drawn from China, which created scores of research and design institutes and universities focusing on agricultural innovation.

As the African Union's Year of Agriculture and Food Security, 2014 could bolster the political commitment and impetus to make agribusiness Africa's next frontier.

Carlos Lopes is the executive secretary of the United Nations Economic Commission for Africa.

By the numbers

5%
Africa's average annual economic growth over the past decade

75%
The percentage of Africans who rely on agricultural production for their livelihoods

$40bn to $50bn
The amount Africa spends yearly on imported agricultural products

25%
Share of Africa's youth as a percentage of global labour force

90%
Share of Africa's coffee production that goes to consuming countries

Sources: Economic Commission for Africa, World Bank, NEPAD

All eyes on $1 trillion

African agribusiness is set for a huge leap, according to a World Bank report

By **Kingsley Ighobor and Aissata Haidara**

Workers plucking tea from plants growing on a hillside on the Mata tea estate. As Rwanda's biggest export earner, tea is a very important part of the country's development process. Panos/Tim Smith

Imagine for a moment the impact of a $1 trillion African agribusiness sector on the lives of Africans. Currently worth about $313 billion, the sector already provides jobs for 70% of the poorest people on the continent. An increase greater than threefold will bring jobs to lift millions out of poverty; most stomachs will be filled with nutritious meals; Africa's agricultural exports will dominate global markets; and the continent's farmers, who have borne the brunt of harsh economic conditions, will get a new lease of life as they become competitive in the global marketplace.

This is not an unreachable dreamland: a World Bank report published in March 2013 argues that it could soon be a reality. The report, *Growing Africa: Unlocking the Potential of Agribusiness*, projects that African agribusiness could be worth $1 trillion by 2030. It's the latest in a string of positive reports about the continent's socioeconomic development prospects, despite political instability in a handful of countries.

No magic wand

But no magic wand will cause a $313 billion agribusiness sector to grow into a $1 trillion behemoth. The World Bank cautions that everyone will have to work hard—governments, the private sector, farmers, and so on. However, the elements for a pole-vault jump are in place. For example, in addition to huge, untapped water resources, Africa has more than 50% of the world's fertile and unused land—that's a whopping 450 million hectares. The continent uses only 2% of its renewable water resources, while the global average is 5%. The steady and increasing private sector interest in African agribusiness is just the icing on the cake.

Also, while global prices of agricultural commodities are rising due to increasing demand, supply of these commodities is slowing due to factors like land degradation and water scarcity in many countries, especially in Asia. "Water scarcity has become a major constraint because of competition from rapidly growing industrial sectors and urban populations," states the Word Bank. Yet Africa has both water and land in abundance.

At first glance, the World Bank report paints a glowing—even celebratory—picture of African agribusiness prospects. But the report also rigorously highlights many stubborn and recurring obstacles in the path of development progress. It states that "to generate the jobs, incomes and food so badly needed for Africa's growing population over the next 20 years, agro-industries need to undergo a structural transformation," and it calls for more concerted investment in the sector.

Infrastructural needs

African agribusiness desperately needs improved infrastructure. "Infrastructure is a high priority for jump-starting agribusiness throughout Africa. Best bets for infrastructure are irrigation, roads, and markets," according to the report. In 2010, for instance, Africa produced 1,300 kilograms of cereals per hectare of arable land, which was about half of what South Asia produced per hectare, according to the World Bank. A major reason for that low production is the African countries' low percentage of irrigated arable land, only 3% on average compared to a 47% average for Asian countries, states the Food and Agriculture Organization (FAO). On top of that, a lack of rural roads impedes farmers' access to markets and increases post-harvest losses.

Although increased financing is needed in the agribusiness sector, there have been improvements lately, notes the report. Even so, only 7% of Africa's agriculture comes from foreign direct investments, compared to 78% for Asia. The good news is that due to rising commodity prices, "the appetite is growing among investors, private equity, and investment and sovereign funds to tap

into Africa's agriculture and agribusiness markets."

Partially because of the lack of infrastructure and investment, a continent with half of the world's fertile land spends $33 billion on food imports annually, including $3.5 billion on rice imports. Gone are those years, in the early 1990s, when sub-Saharan Africa was a net exporter of agricultural products. Currently, imports are as much as 30% greater than exports.

The report suggests it should be astonishing that developing countries such as Brazil, Indonesia and Thailand export more food products than all of sub-Saharan Africa combined. "The value of agricultural exports from Thailand (a country of 66 million people) now exceeds that of all sub-Saharan Africa (a region of 800 million people)." This situation is not sustainable, says Gaiv Tata, the World Bank director for financial and private sector development in Africa. "African farmers and businesses must be empowered through good policies, increased public and private investments and strong public-private partnerships."

African leaders face the challenge

It's not as if African leaders need any convincing about the need for more investments in agriculture, but more actions must match their words. In 2003, the New Partnership for Africa's Development (NEPAD), an African Union framework for the continent's socioeconomic development, launched the Comprehensive African Agriculture Development Programme (CAADP) "to eliminate hunger and reduce poverty through agriculture." By signing on to CAADP, most African governments agreed to invest at least 10% of their national budgets in agriculture and to raise agricultural productivity by at least 6%.

Through CAADP, Africa is slowly but steadily moving forward. Countries such as Ghana, Ethiopia, Rwanda and others have placed agriculture at the top of their development priorities list. Martin Bwalya, the head of CAADP, says that over the past years, 40 countries have either signed the compact or finalized investment plans while 13 others have yet to sign up to CAADP. However, the NEPAD 2014 report highlights that just nine out of Africa's 54 countries have met the target of 10% of budget allocation, while another group of nine are currently spending between 5% and 10%.

To commemorate 10 years of CAADP, African leaders declared 2014 "the Year of Agriculture and Food Security in Africa." With African agriculture growing at 4%, the leaders hope to build on that momentum in the coming years.

Even these modest gains are commendable, analysts believe. They are a "strong contrast to what many acknowledge to be inadequate or even nonexistent national strategies that previously governed Africa's agricultural sector," according to the Brookings Institution, a Washington-based think tank. Hennie van der Merwe, CEO of the South Africa–based Agribusiness Development Corporation, adds that "Africa is currently experiencing a revival in terms of its focus on agribusiness, not only to increase food self-sufficiency, but also to create jobs and economic activity, specifically in rural areas."

The World Bank concurs: "Côte d'Ivoire, Kenya and Zimbabwe all have been successful exporters in terms of market share.... Ethiopia, Ghana, Mozambique and Zambia stand out as African success stories in terms of significant increases in export market shares since 1991."

> **"The value of agricultural exports from Thailand now exceeds that of all sub-Saharan Africa.**

Land problems

Political commitment and investment aside, another lingering problem is land allocation and acquisition. Farmers in many countries cannot expand their farming because they have limited access to land, and discriminatory laws sometimes prevent women from gaining ownership. The World Bank report addresses the need for judicious and equitable land allocations, stressing that such allocations shouldn't threaten people's livelihoods. Land purchases also need to follow ethical standards; for example, buyers should pay fair market rates after consultation with local communities.

In 2011, the Oakland Institute, a US-based think tank, reported unfair land deals in South Sudan, under which foreign companies bought up fertile and mostly uncultivated land. Such deals did not clarify land tenure and usage, and worse, even threatened the land rights of rural communities. "Governments and investors must also put in place effective environmental and social safeguards to reduce potential risks of agribusiness investments, especially those associated with large-scale land acquisitions by investors," the institute advised.

Taking the ICT route

Experts generally agree that technology, particularly information and communication technology (ICT), will boost agriculture. In an earlier report titled *ICT for Agriculture in Africa*, the World Bank listed ways in which ICT could support agriculture at every stage: pre-cultivation (crop and land selection, access to credit, etc.); crop cultivation and harvesting (land preparation, management of water, fertilizer and pest control, etc.); and post-harvest (marketing, transportation, packaging, food processing, etc.). Geographical information systems (GIS) can be used for land-use planning and climate change adaptation, for example, the Bank stated.

Already farmers in Kenya and Zimbabwe have deployed ICT in ways that have increased their income and productivity. Charles Dhewa, a Zimbabwean communication specialist, in 2012 launched eMkambo, an integrated virtual market where farmers and buyers share knowledge and transact business by means of mobile phones (See *Africa Renewal December 2013 edition*).

Farmers are also using ICT in other ways: to share new production processing and marketing skills in Burkina Faso; to trace mangoes via a system that connects Malian farmers to global consumers; to garner important information that improves forest governance in Liberia; to provide SMS-based services developed by Zambia's National Farmers Union. The World Bank says such ICT initiatives have been successful in part because "real economic value was added either because of savings resulting from the use of ICT or an increase in revenue or profitability."

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Gendering Agriculture

Women spearhead efforts to feed the continent

By **Nirit Ben-Ari**

Farm labourers harvest pears in Western Cape Province, South Africa. Peter Titmuss/Alamy

Do land, seeds and crops have a gender? Perhaps they do in sub-Saharan Africa, where women produce up to 80% of foodstuffs for household consumption and sale in local markets, according to a report by the World Bank and the Food and Agriculture Organization (FAO). For crops such as rice, wheat and maize, which make up about 90% of food consumed by rural dwellers, it is women who mostly sow the seeds, do the weeding, cultivate and harvest the crops and sell surpluses.

And for secondary crops such as legumes and vegetables, says the FAO, "Women's contribution...is even greater," adding that it's as if only women are involved in producing these crops. What's more, they make and tend the gardens that provide much-needed nutritional and economic well-being.

Feeding the continent

While women farmers are essentially feeding the continent, they have remained largely in the background, calling little attention to themselves and receiving little help. But this situation is changing as they spearhead efforts to transform Africa's agricultural landscape. Take for example Grace Kamotho, a lecturer at Karatina University in Nairobi, Kenya, where she also trains farmers in new farming technologies and practices that lead to higher productivity. "Being an African woman," she told *Africa Renewal*, "I recognize the fact that women are more associated with food preparation and care of the family than men, and I understand the importance of feeding families with appropriate and balanced diet."

Ms. Kamotho recently participated in a training workshop on vegetable production in greenhouses, at Volcanic Institute's Centre for Agricultural Development and Cooperation in Israel. Here she gained knowledge about seed and vegetable seedling cultivation, among other subjects. She said the training's focus on vegetables was necessary because in rural Africa, vegetables supplement meals of maize, rice, potato and cassava or yam are a good source of protein.

"Women tend to shop or procure food for their families, which in some cases means growing it in kitchen gardens," she says. But women farmers go beyond tilling the soil: they also ensure prudent food management—deciding what to keep for the household and what to sell. "When a drought or economic crisis hits, women feel the pinch most, as they have to find ways to provide for their families," says Ms. Kamotho.

Comparing men and women farmers

Despite the role and impact of women in African agriculture, there's still an unsettling disparity in the support they receive compared to men. A World Bank report states that in Nigeria, for example, while women constitute about 60% to 80% of the agricultural work force, men generally make key farm management decisions. "As a result, agricultural extension services throughout the country have traditionally focused on men and their production needs."

In their book *Transforming Gender Relations in Agriculture in Sub-Saharan Africa: Promising Approaches*, authors Marion Davis, Cathy Farnworth and Melinda Sundell argue that women's productivity is lower than that of men because they have limited access to resources such as land, credit and other production inputs. In an interview with IRIN, a UN humanitarian news service, Ms. Sundell said that in Kenya, the value of female farmers' tools was about one fifth that of their male counterparts.

Credit is undoubtedly necessary to acquire land, machinery, fertilizers, irrigation and high-quality seeds, and to hire labour. Moreover, when women's access to finance is restricted in comparison to men's, it creates a power imbalance that affects women's ability to negotiate their role within households, according to the International Center for Research on Women (ICRW). Some banks set up roadblocks to getting the necessary capital, such as the need for a male guarantor or the requirement that a beneficiary must be literate, notes the World Bank in its *2009 Gender in Agriculture Resource Book*. Makhtar Diop, the World Bank vice-president for Africa, warns that "the status quo is unacceptable and must change so that all Africans can benefit from their land."

> **"When it comes to finance, we need to apply a gender lens. When you look at how people get access to financial services, especially here in Africa, agriculture is underserved.**

Financing problems

The ICRW believes that women farmers who own property and have access to finance will have greater bargaining authority and control over their incomes. In addition, studies show that women are more likely than men to spend their incomes on their families' food, education and health. Laté Lawson-Lartego, director of the economic development unit at Care USA, a humanitarian organization, told the US magazine *Forbes* that "when it comes to finance, we need to apply a gender lens. When you look at how people get access to financial services, especially here in Africa, agriculture is underserved."

The UN and non-governmental organizations are investigating and implementing projects that provide greater access to micro-credit for women farmers. The Hunger Project (THP), a US-based international NGO with offices across the world, has created a micro-finance programme that involves giving training, financial advice and credit to African female farmers. THP has to date loaned about $2.9 million to women farmers in Benin, Burkina Faso, Ethiopia, Ghana, Malawi, Mozambique, Senegal and Uganda. As a result, beneficiaries raised their production levels.

Soro Yiriwaso, another micro-finance institution based in Mali, supports women in the southern part of the country in boosting food security. Women represent 93.5% of Soro Yiriwaso's borrowers, while two thirds of its loan portfolio goes to agriculture. Between 2010 and 2012, under its *Prêt de campagne* scheme, the institution gave agricultural loans to women members of recognized cooperatives in 90 villages at the start of the planting season. These loans are repaid with interest after harvest.

African leaders' lifeline

African leaders have also pledged to help women farmers under the 2003 Maputo Declaration (the Comprehensive Africa Agriculture Development Programme), which is intended to increase support for smallholder farmers. ActionAid, an international aid agency, has urged these leaders to fulfil that pledge lest farmers be unable to maintain the fight against hunger. "If women are given equal access to land, seeds, as their male counterparts, we can reduce hunger in the world by 140 million people, which is about 17% of people who are living hungry."

One reason African women are largely excluded from decision-making in their homes and communities, and underrepresented in leadership roles, is their high rate of illiteracy. But according to the Swedish Agricultural International Network Initiative (SAINI), when women are given the chance, the farms they run perform just as well as those headed by men—or even better.

In a study of western Kenya, SAINI found that female-headed households had agricultural yields that were 23% lower than those of male-headed households, and attributed the difference to less secure access to land and lower educational levels. A male farmer from Zambia told SAINI that "there were men who have died and left their spouses and children. Their farms are still functioning and are even better after their deaths. This is because the women were involved in planning and decision-making."

Bright future

Fortunately, the future is bright for women farmers. They are benefiting from more training opportunities, incentives and other programmes designed to equip small-scale women farmers with information, skills and other inputs to improve crop quality and quantity. For example, in the Mbeya region of Tanzania, the Bill and Melinda Gates Foundation is providing women farmers with agronomy training that addresses gender-related norms and attitudes that discourage them from engaging in coffee production. These farmers learn how to improve coffee quality and quantity, which in turn increases their incomes.

The Alliance for a Green Revolution in Africa (AGRA), an organization based in Kenya that promotes the productivity and livelihoods of smallholder farmers, has teamed up with Tanzania's agriculture ministry to launch the Integrated Soil Fertility Management programme to promote improved soil health through intercropping cereals with legumes. Under this programme, women receive information on soil fertility through community radios, mobile phones and agriculture extension workers.

Any transformation in Africa's agriculture will depend on women's participation. "Investing in women's economic empowerment is a high-yield investment, with multiplier effects on productivity, efficiency and inclusive growth for the continent," says Kathleen Lay from ONE, an organization campaigning to end global poverty. The International Fertilizer Development Center, an organization that focuses on enhancing agricultural productivity in developing countries, puts it succinctly: "The African farmer is primarily a woman farmer. And she is a good farmer who can feed her family and her continent if she is given the tools and the opportunities to do so."

A scientist analyses samples in a lab in Johannesburg, South Africa. Africa Media Online/Karen Agenbag

Breaking the glass ceiling: Women agricultural scientists

By **Munyaradzi Makoni**

They are selected because they are—or could be—as good as agricultural scientists anywhere. They are groomed in leadership, and conduct research into problems facing their individual countries. They still face an enemy—the perception that African women agricultural scientists can't lead in innovation. Even as these experts continue to struggle for opportunities to advance their careers, they know that they are capable of bursting age-old stereotypes.

Help is at hand. African Women in Agriculture Research and Development (AWARD), a Nairobi-based career development programme that supports women agriculturists across sub-Saharan Africa, is turning things around for these women. AWARD has become a useful tool to unlock abilities that many always knew existed in African women but few bothered to promote.

There is a reason for the increasing popularity of AWARD. The UN Food and Agriculture Organization (FAO) reports that over two thirds of all women in Africa are employed in the agricultural sector, producing nearly 90 percent of the food on the continent. In addition, AWARD's own research on women in agriculture in 125 African agricultural institutions found that although women produce, process and market most of Africa's food crops, only one in four agricultural researchers is female.

Given the urgent need to increase the number of skilled women in the agricultural sector, AWARD has been providing fellowships since 2008 to female agricultural scientists, so the expertise and knowledge they acquire will benefit other smallholder farmers. Women who get these fellowships learn new skills and go into educational institutions and research programmes. Once they complete their studies or training, they can confidently apply for top positions in government or in other organizations.

It is not just AWARD that has been involved in efforts to empower women. Donors and foundations such as the Bill & Melinda Gates Foundation, the US Agency for International Development (USAID), the Alliance for a Green Revolution in Africa (AGRA) and the France-based Agropolis Foundation have all been chipping in. Indeed, the Bill & Melinda Gates Foundation and USAID already provide substantial funding to AWARD. Up to 200 universities and research institutes worldwide are involved in training female researchers.

Mentoring

These women agricultural scientists receive appropriate training in areas such as crop and soil sciences, ecology, animal rearing, water and irrigation management and horticulture. Qualified women receive up to two years of fellowship and are then matched with mentors. Mentoring is one of the key aspects of the programme.

"You know, it's not easy to get a mentor if you are not part of this programme," says Elizabeth Bandason, insect scientist at Bunda College, University of Malawi. The best part is that you can realign your career goals after considering your mentor's advice, she adds. As part of her fellowship, Ms. Bandason has attended a six-month placement at Dow AgroSciences in Indianapolis, US. With that training, last year she was able to develop tools to detect insecticide resistance.

Another female scientist making a huge impact is Martha Mueni Sila, Kenya's principal agricultural officer. She says that training in leadership and management equips women with rare and important skills. "When my mentor shared her experiences and expertise

with me, it helped to build my confidence and self-esteem, which I think are useful for a woman scientist in a male-dominated profession."

"We all need someone that we can look up to, especially in a case where few women are in sciences," says Dr. Themba Mzilahowa, a research scientist at the Malaria Alert Centre in Malawi. "Mentors are role models." Dr. Mzilahowa, himself an AWARD mentor, told *Africa Renewal* in an interview that bringing women together from diverse backgrounds and teaching them how to break through societal barriers using science enhances their commitment to agriculture.

AWARD fellowships are given on the basis of each scientist's intellectual merit and leadership capacity, and the potential of her work to improve the livelihoods of African smallholder farmers. "The fellowship does not just fall upon one's head, the competition to get the fellowship provides important principles to women scientists," Mzilahowa explains. "It's a catalyst for sound decision-making."

Fighting the odds

Despite the impact of projects such as AWARD's, African women still face many hurdles. It has been documented that some cultural practices make them, at times, less assertive than men. And family demands such as having and looking after children tend to limit women's opportunities for higher education. "Particularly in sub-Saharan Africa, the culture and the society dominate the women...however, very recently, many governments have been giving encouragement to women and girls to get involved in the scientific fields," according to Likyelesh Gugsa, a senior plant genetics expert at the Ethiopian Institute of Agricultural Research.

Ms. Gugsa maintains that women face huge challenges daily and often lack the right kind of support. The employment environment can be hostile to women scientists, adds Ms. Gugsa. Sometimes they even refuse to accept top positions for fear of criticism and discrimination. This is one of the reasons a typical AWARD programme also includes training that empowers women to deal with all kinds of harassment as they progress in their careers.

After completing her AWARD programme, Ms. Gugsa spent eight months with the African Fellows Programme at UK-based Rothamsted International, a non-profit charity that promotes sustainable agriculture in developing countries. Thereafter, her proposal to the Alexander Von Humboldt Foundation won her a two-year award that ended in September 2013. She plans to establish a medium-size plant-breeding company in Ethiopia this year.

> Over two thirds of all women in Africa are employed in the agricultural sector, producing nearly 90 percent of the food on the continent.

Reaping the rewards

While about 320 women from 11 sub-Saharan African countries have so far benefited from the AWARD fellowship, the question is, what happens to the millions of other women who are not likely to benefit from such projects? Looking at it from that angle downplays the impact that one well-trained and educated female scientist can have in a country, says Mueni Sila, who won the award in 2011 and was immediately entrusted with more responsibilities when she went back to her employer, the Kenyan government.

More opportunities have been chasing Ms. Sila. She has led a team to develop a cassava strategy to guide the cassava sub-sector in Kenya, and has also spearheaded a team that is compiling a cassava guideline to teach others how to produce the crop and add value at every step, from sowing, harvesting to consumption. She argues fervently that female scientists, professors and senior managers can offer different insights and perspectives that can help both female and male farmers.

> **"Particularly in sub-Saharan Africa, the culture and the society dominate the women...however, very recently, many governments have been giving encouragement to women and girls to get involved in the scientific fields.**

Ms. Sila's view is that if women are the cornerstones of agriculture in Africa, they must lead wealth creation and poverty alleviation efforts. As more and more women are trained, they will be in a better position to pass information to others. Training women will "boost knowledge sharing, which will translate into improved quality of agricultural science in Africa," she says.

Marias Kaibeh Brooks, an agricultural extension officer for Welthungerhilfe, a German non-governmental organisation operating in Liberia, agrees with Ms. Sila. "I became more effective in decision-making processes in my organisation, community and family with the gradual increase in my communication skills" says Ms. Brooks, who lists proposal writing among her newly acquired skills.

Ms. Brooks, herself a 2013 AWARD fellow, hopes to farm livestock one day. And she believes that there can be a domino effect: "If fellows are able to serve as mentors to other females, it would have a ripple effect on other women scientists, assisting in confidence building and skills development." Investing in women scientists allows donors and individuals to tap into what she calls a "rare resource" that has been underutilised for too long.

Women like Ms. Gugsa and Ms. Brooks are in the forefront of the efforts to draw attention to women as key players in Africa's agricultural transformation. But investment in women should happen across the board, not just in agriculture, argues Ms. Brooks. As Christine Lagarde, the managing director of the International Monetary Fund, said at the World Economic Forum in Davos, Switzerland, last year, "When women do better, economies do better." Ms. Gugsa agrees: "Investing in women isn't just good ethics, it's sound economics." If so, the AWARD project looks like a good first step.

An aerial view of fields in Laikipia County, Kenya. Panos/Frederic Courbet

Is Africa's land up for grabs?

Foreign acquisitions: some opportunities, but many see threats

By **Roy Laishley**

2.5 mn

hectares of African farmland allocated to foreign-owned entities between 2004 and 2009

An apparent surge in the purchase of African land by foreign companies and governments to grow food and other crops for export has set alarm bells ringing on and off the continent. The headlines have been strident: "The Second Scramble for Africa Starts," "Quest for Food Security Breeds Neo-Colonists," "Food Security or Economic Slavery?"

The outcries reflect the continuing impact of the continent's history, when as recently as the last century colonial powers and foreign settler populations arbitrarily seized African land and displaced those who lived on it, lending considerable emotion to the current volatile issue. Some agricultural experts have wondered whether such land deals could lead to a form of "neo-colonialism". But immediate, practical concerns are also prominent. "This is a worrisome trend," noted Akinwumi Adesina, the then vice president of the advocacy group Alliance for a Green Revolution in Africa (AGRA). Such foreign land acquisitions, he argued, have the potential to hurt domestic efforts to raise food production and could limit broad-based economic growth. Many deals have little oversight, transparency or regulation, have no environmental safeguards and fail to protect smallholder farmers from losing their customary rights to use land, added Mr. Adesina, now Nigeria's minister for agriculture.

The sheer size of some of the land agreements has added to the alarm. A deal to allow South Korea's Daewoo Corporation to lease 1.3 million hectares was a key factor in building support for the ouster of Madagascar's President Marc Ravalomanana in March 2009. In Kenya the government struggled to overcome local opposition to a proposal to give Qatar and others rights over some 40,000 hectares in the Tana River Valley in return for building a deep-sea port.

A number of international organizations reacted to this development. The Food and Agriculture

Organization (FAO) and the World Bank commissioned studies into so-called "land grabs." At the 2009 summit of the Group of Eight (G-8) industrialized countries in Italy, Japan pushed for a code of conduct to govern such schemes. Any code of conduct is going to be difficult to negotiate, and it will be even more difficult for industrialized countries to apply to deals that are primarily worked out between countries in the South, the UN's Special Rapporteur on the Right to Food, Olivier De Schutter, told Africa Renewal.

In a report titled "Large-scale Land Acquisitions and Leases", Mr. De Schutter wrote that while such investments provide certain development opportunities, they also represent a threat to food security and other core human rights. "The stakes are huge," he told *Africa Renewal*. Unfortunately, "the deals as they have been concluded up to now are very meagre as far as the obligations of the investors are concerned." He also noted that agreements concerning thousands of hectares of farmland are sometimes just three or four pages long.

Yet for African countries agreeing to such deals, the possible advantages are also attractive. While African agriculture rarely attracts significant investments or external aid — and the current global economic downturn has made external financing even more scarce — leasing unused land to foreign governments and companies for large-scale cultivation can seem like a way to boost an underdeveloped sector and create new job opportunities.

A study by the International Institute for Environment and Development (IIED), a research group based in the UK, estimated that nearly 2.5 mn hectares of African farmland had been allocated to foreign-owned entities between 2004 and 2009 in just five countries (Ethiopia, Ghana, Madagascar, Mali and Sudan) it studied in depth. The sheer scale of many leases is unprecedented, said the IIED report, *Land Grab or Development Opportunity?*, which was prepared for the FAO and the UN's International Fund for Agricultural Development.

The surge in interest in African land has been driven by a number of factors. On the side of investors, those include a desire for food security back home and to a lesser extent rising demand for biofuels. Behind both is the expectation of rising costs of land and water as world demand for food and other crops continues to expand.

Many of the government-to-government deals are aimed at meeting food needs, especially in the states of the Arab Gulf and in South Korea. Indian companies, backed in part by their government, have invested millions of dollars in Ethiopia to meet rising domestic food and animal feed demand. Commercial enterprises, many of them European, as well as Chinese companies, have been in the lead in cultivating jatropha, sorghum and other biofuels in countries such as Madagascar, Mozambique and Tanzania.

Africa is a particular focus for this investment explosion because of the perception that there is plenty of cheap land and labour available, as well as a favourable climate, Mr. De Schutter points out. In Mozambique, Tanzania and Zambia, for example, only some 12% of arable land is actually cultivated.

Africa so far has been able to mobilize only limited financing to develop its arable land. Despite persistent calls for increased domestic investment, agriculture has lagged well behind other sectors. The African Union has urged governments to devote 10% of their spending to agriculture, but not many have actually met that target. Donor countries and institutions have also failed to play their part, with agriculture's share of aid tending to fall.

With land apparently in abundance, but money not, the offer by foreign investors to develop agricultural land appears very attractive. But with much of the land not as unused as it might seem and with actual returns on agricultural investment far lower than presented in initial feasibility studies, the political and economic reality for African governments can be very sobering.

"Governments are sitting on a box of dynamite," Namanga Ngongi, former president of AGRA, initiated by former UN Secretary-General Kofi Annan, told the media.

Towards a strategic approach

Recent assessments by IIED, FAO, the World Bank and the Washington-based International Food Policy Research Institute (IFPRI) all confirm the shortcomings and potential dangers. These include the risks of undermining domestic efforts to increase food production, the danger that agricultural projects aimed exclusively at foreign markets may do little to stimulate domestic economic activities, and the potential loss of land rights for local farmers.

Many of the studies also point to possible benefits for a sector strapped for cash. These include the creation of jobs, the introduction of new technologies, improvements in the quality of agricultural production and opportunities to develop higher-value agricultural processing activities. There might even be "an increase in food supplies for the domestic market and for export," the FAO says.

To reap the benefits of this new trend, says an IFPRI study, *"Land Grabbing" by Foreign Investors in Developing Countries: Risks and Opportunities*, governments need to develop the capacity to negotiate sound contracts and to exercise oversight. This can help create "a win-win scenario for both local communities and foreign investors." The studies advise African governments to be strategic in their approach. In his report, Mr. De Schutter puts forward a number of recommendations to guide such land deals. These include: the free, prior and full participation and agreement of all local communities concerned — not just their leaders; the protection of the environment, based on thorough impact assessments that demonstrate a project's sustainability; full transparency, with clear and enforceable obligations for investors, backed by specified sanctions and legislation, as necessary; and measures to protect human rights, labour rights, land rights and the right to food and development. Such comprehensive deals would be in the long-term interest of investors and local communities alike, IFPRI notes, pointing out that land disputes can become violent, and governments may quickly find themselves with no alternative but to change or rescind contractual arrangements.

Land rights

Land ownership is a core issue. Only a relatively small portion of land in Africa is subject to individual titling. Much land is community-owned, and in some countries state-owned. Even land that is officially categorized as un- or under-utilized may in fact be subject to complex patterns

see page 34

'A common vision for agriculture-led growth'

NEPAD adds value to Africa's farming sector, says Glenn Denning

A farmer checks the quality of maize, freshly harvested from one of his fields. Panos/Jason Larkin

Glenn Denning is director of the Centre on Globalization and Sustainable Development at Columbia University's Earth Institute in New York, and was previously director of the Millennium Development Goals (MDG) Centre in Nairobi, Kenya. He talks to *Africa Renewal* about the role of the New Partnership for Africa's Development (NEPAD) in strengthening the continent's agricultural potential.

What has been NEPAD's contribution to Africa?

I was living in Africa when NEPAD was established in 2001, and I closely observed its role evolve during the past decade. The concept made good sense. Africa could finally project a common voice on development issues and support a common vision for agriculture-led growth. That voice and vision made it easier to engage with international development partners, including the newcomers from emerging economies.

Looking back, I see the Comprehensive Africa Agriculture Development Programme (CAADP) as an important achievement [see *Africa Renewal*, April 2011]. Initially, many saw CAADP as an extra layer of bureaucracy in agricultural planning. But strong and consistent advice on how to design and plan agricultural investments led to increased credibility and greater acceptance of CAADP's added value. Without doubt, the best proposals submitted to the recently established Global Agriculture and Food Security Programme (GAFSP)* were those with a CAADP Compact that aligned multiple stakeholders to country-led agricultural strategies and plans.

How can NEPAD contribute better to Africa's development?

Agriculture remains underdeveloped in Africa. With the right investments and policies, the continent could easily feed itself and export food to other parts of the world. NEPAD could provide an important and unique contribution by promoting international partnerships to remove the scientific, infrastructure and policy bottlenecks to agricultural production. Agricultural research capacity and output have stagnated or, in many countries, have weakened over the past 25 years.

NEPAD, through CAADP, can provide the platform for sub-regional, multi-country research. Sustainable land and water management in a setting of climate change must be central to that research agenda. The other major bottlenecks relate to markets. Intra-African trade can be greatly improved through initiatives to improve physical infrastructure and to reduce formal and informal cross-border trade barriers. NEPAD should also promote and facilitate regional strategic grain reserves to help mitigate the impacts of climate- and conflict-induced food shortages.

Do you share the view that NEPAD is still a remote and vague project for most Africans?

With its reorganization from a secretariat to an executive agency, NEPAD's development contributions and visibility will likely improve. Agriculture is central to the lives and livelihoods of most Africans. By engaging professionally and substantively in the agriculture and food sectors, NEPAD can become better known as a valued partner in advancing food security and rural growth.

But to be effective, the agency will require people and funds. The big test for NEPAD in the coming years will be its ability to attract and sustain support from African governments. With the current resources boom, there is really no excuse. The challenge for governments and NEPAD is to channel those new resources into investments that benefit the continent's hungry, poor and underserved. Done effectively, the marking of NEPAD's second decade will be an even greater cause for celebration.

**The Global Agriculture and Food Security Programme is a multilateral funding mechanism for developing countries established at the request of the 2009 summit of the Group of 20 leading economies. At the end of August 2011 it had $557 million in funding and was active in 12 countries, half of them in Africa.*

Livestock tracking in Africa goes high tech

By **Pavithra Rao**

In an era of lightning speed, ever-present wireless connectivity, high tech is now also being used to benefit livestock farmers in rural areas of Africa. Widely known for being used to track wild animals, GPS, or "Global Positioning System" tracking devices are being adapted by some small- and large-scale farmers to manage their livestock, notably in Kenya, Botswana, and South Africa.

Tracking an animal is accomplished through either the bolus technique, in which an animal is made to swallow a tracking "tablet", or through a microchip implantation or an ear-tagging technique. Once fitted with a device, GPS technology can precisely pinpoint an animal's location and alert farmers whenever the livestock goes missing or is stolen.

In addition, the technology is being fine-tuned to give farmers the ability to control outbreaks of diseases. Explaining how the GPS system works on animals, Ebby Nanzala of the *New Agriculturalist*, an online magazine that focuses on tropical agriculture, says, "Through their unique numbers on the tag, they [farmers] are able to maintain the data. If there is a disease outbreak, it will be easier for it to be tracked and controlled."

Mr. Nanzala adds that though the costs for such technology are high, the cost of losing animals to theft and disease is clearly higher. While allaying fears of the high cost of technology, he notes that with government support, "the [GPS tracking] chips will be very cheap and could be used and re-used for over 30 years".

Similarly, the UN Food and Agricultural Organization has created a GPS-based mobile phone application that will inform farmers of their animals' vaccination schedules, veterinary treatments as well as disease outbreaks. ●

Through GPS trackers, farmers can precisely pinpoint the location of livestock over any given area. Creative Commons/Dohduhdah

New technology helps small farmers attract 'big' business

By **Geoffrey Kamadi**

Small-scale farmers in Kenya can now store and manage data on the pesticide content in their crops before exporting them, thanks to a cloud-based mobile platform that keeps track of pesticide residues in produce. Farmforce software, an initiative of the Swiss-based Syngenta Foundation for Sustainable Agriculture, will phase out time-consuming manual farm record-keeping and replace it with an online version that can be accessed by farmers freely via a mobile phone, according to *Business Daily Africa* of Kenya.

The Syngenta Foundation, backed by the Swiss government, developed the $2 million platform in 2011 with the help of a team based in Switzerland and a support team in Kenya.

Furthermore, the technology is not restricted to horticulture; it can be used for all types of crops.

Already countries such as Ghana, Guatemala, Indonesia, Nigeria and Zimbabwe have expressed interest in the service. It's particularly useful where quality standards and traceability requirements for formal markets are an issue.

With 5 million farmers, including small subsistence growers and large industrial agriculturalists, Kenya has been a hotbed of technological innovations for the agrarian community, according to the 2011 World Bank's e-sourcebook *ICT in Agriculture*.

Uganda is also using a cloud-based mobile platform to combine agricultural information and financial services designed for smallholder farmers, reports the *Christian Science Monitor*. For example, farmers can order and pay for seeds and fertilizers with their mobile phones, and also collect payment for their produce using the same service. ●

How mobile technology is changing farming in Africa

By **Nirit Ben-Ari**

John Wahngombe (left), a farmer from Murugaru, Kenya, uses a mobile phone application to check produce prices in the capital Nairobi before selling his crops to middle men. *Panos/Sven Torfinn*

Are you spending all your time texting your friends at home and abroad? African farmers are busy texting too. But instead of exchanging the latest tidbits on the private lives of celebrities, they are using their mobile phones to share information on the chances for rain or the prices of produce in nearby markets, or to track the fertility of their farm animals.

Mobile technology is simple and user-friendly, and most importantly, it's becoming more affordable. It helps rural, small-scale farmers improve the quality of their crops, protect themselves from avoidable crop and money losses from over- or under-farming, and insure against a rainy day—quite literally.

The electronic market

Since mobile-based market information systems were introduced, more phone farming patents have been filed across Africa as a result of the proliferation of mobile services and fall in data costs.

Take the SMS software programme e-Soko (meaning "e-market" in Swahili), for example. This programme makes it easy for farmers to receive updates on market prices, both wholesale and retail, for their crops. This allows farmers to bring their crops to the market on time, eliminate middlemen and place new orders.

According to Citi 97.3, an Accra-based radio station in Ghana, without price information received through text messages from extension officers, farmers are often unaware of the prevailing selling prices, and hence can lose opportunities or money. "Sometimes middle-men or -women dictate their own prices to the farmers. The farmers usually accept the meager offers, which are below the cost of production, leaving them poorer."

This is where e-Soko comes in. According to reports, this is how it works: representatives from e-Soko visit 50 markets nationwide daily to collect the updated prices of foods. They report the information to e-Soko centres, which compress the information into short text messages that are then sent to all farmers who subscribe to the service. Additional information delivered through the same service includes weather patterns and reminders for ploughing and sowing the land, applying fertilizer, checking weeds and harvesting.

Insurance for a kilogramme of maize

People in rural areas, who have been self-sustaining farmers for generations, are often unaware of the importance of insurance to secure their livelihood. Moreover, they cannot afford conventional insurance. According to the South Africa–based online publication *How We Made It In Africa*, a Kenyan company has come up with a simple solution. It has launched a product called Kilimo Salama ("safe agriculture" in Swahili) that protects smallholder farmers against adverse weather conditions such as floods or drought.

Kilimo Salama allows farmers to get insurance for as little as one kilogramme of maize, seed or fertilizer. To be covered under the scheme, says the online publication, a farmer need only pay a small amount on top of the price of a bag of seed, fertilizer or other input. In the event of extreme weather conditions, the insurance company, UAP Insurance Group, covers the inputs for which the farmer paid a premium. Payment for the insurance is made at the time of purchase of the inputs, by a broker using a camera phone with a special bar code reader. All money transfers are made through M-Pesa, a mobile-based money transfer and micro-financing service.

Another useful innovation is the CocoaLink programme, which the American chocolate corporation, the Hershey Company, has introduced in West Africa, where 70% of the world's cocoa is grown. Yet again farmers are using mobile phones, so far in Ghana only, to disseminate information on farming topics such as farm safety, health, crop disease prevention, post-harvest production and crop marketing, according to the company.

By the end of 2013, more than 3,700 farmers had subscribed to the CocoaLink service, out of which 95% were cocoa farmers in 15 farming communities in Ghana's western region. About 100,000 messages have already been sent through CocoaLink. Of the farmers registered with CocoaLink, 40% have attended training courses managed by the World Cocoa Foundation, an organization of companies with interests in the chocolate industry that seeks to promote sustainable cocoa economies.

iCow

Another phone farming innovation has come from Kenya, where farmers can now follow their cows' individual fertility cycles using the meaty mobile application iCow. The application tracks each cow or heifer and generates a comprehensive, customized fertility calendar for each animal.

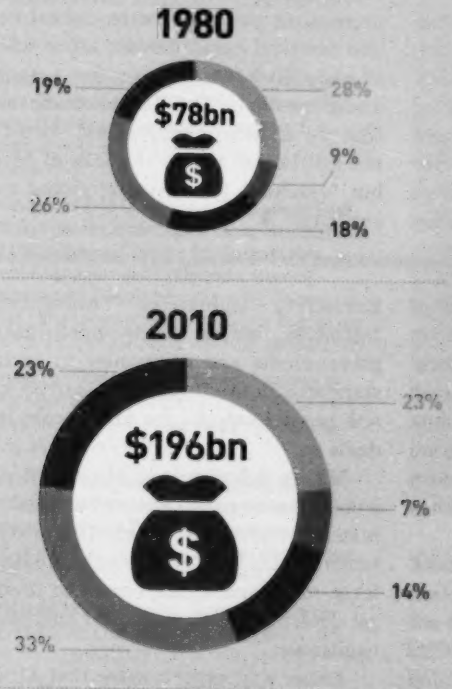
The application is also used to assist farmers to maximize milk production. According to Green Dreams, the first certified organic farm in Kenya, which developed iCow, more than 1.6 million dairy farmers in Kenya, the majority of whom are smallholder farmers, use rudimentary methods to manage their cows' oestrus cycles and milk production. As a result, these farmers are able to sell an average of only 3 to 5 litres of milk per day, while calculations show that 15 litres per day is the minimum required to bring a family over the poverty line.

Other services iCow performs include keeping track of feeding; showing local veterinary contact information and market prices of cattle; generating a calf calendar to ensure calves are reared following best practices and are thus able to reach optimum genetic potential; providing a customizable immunization calendar; and providing health, diet, nutrition, illness and disease information services.

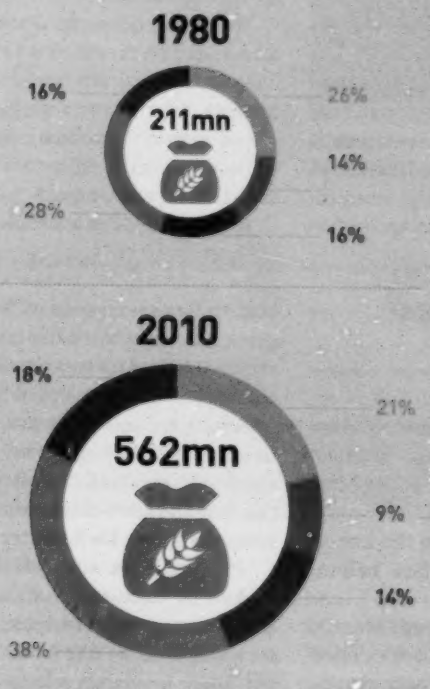
But what is the future of phone farming? While these simple technologies are transforming small-scale agriculture in rural Africa, "the 'know-how' and 'how-to' of African agriculture cannot be reduced to SMS messaging or accessed only through mobile phones," points out the Future Agriculture Consortium, an Africa-based alliance of research organizations seeking to provide information and advice to improve agricultural policy and practice in Africa. "The real challenge is to harness the power of mobile communication technology" in order to move to the next level: fully advanced high-tech African agriculture. ●

Africa's agricultural sector performance

Contribution by subregions to total African food production (value)



Contribution by subregions to total African food crop production (tons)



90%
percent of the agricultural output in Africa is produced by smallholder farmers on farms averaging 2.5 hectares in size. Commercial farms produce the other 10%

Key

Central Africa · North Africa · West Africa · East Africa · Southern Africa

Source: FAO, NEPAD

Africa's food policy
from page 3

extent, the vagaries of weather. Thailand's food exports, for example, are valued at more than the combined value of the whole of Sub-Saharan Africa's food exports.

Africa' plan to revamp agriculture through CAADP is a noble idea. Yet it suffers from two major weaknesses: governments don't have or are unwilling to commit enough money to back its plan and CAADP has no power to compel members to adopt its recommendations.

CAADP needs funds

Take the European Union's farm subsidy programme, the Common Agriculture Policy (CAP), for instance, which was created in response to severe food shortages in Europe back in the 1950s. CAP has money — in 2013 it was gobbling up about 40 per cent of the EU's budget — and the power to impose conditions on members that get subsidies. True, EU subsidies hurt farmers in poor nations, but they have raised the incomes of EU farmers and produced more quality food for consumers.

In contrast, CAADP uses moral suasion to induce members to stick to their commitments. Worse still, it relies heavily on donors for investments in countries that have signed on. Equally troubling is that a big chunk of the national budgets of most CAADP signatories comes from donors, subjecting Africa to aid cuts whenever donor economies slump or priorities shift, or when domestic African political fortunes change, as events in Malawi, Rwanda and elsewhere have clearly shown.

CAADP can be effective, but only to the extent that signatories are committed to doing the necessary heavy lifting. To demonstrate its commitment to food security, the AU should move beyond platitudes and follow the EU's example — make it mandatory for members to contribute to a common fund for agriculture. Each member's contribution could be based on its ability to pay, perhaps using GDP per capita as a guide. Such a fund could then be used to reduce CAADP's dependence on donors. To its credit, the AU has set up a foundation to raise project funds from individuals and the private sector. It's a modest but encouraging practical step that shows that the AU intends to go beyond mere platitudes of goodwill.

True, setting aside a tenth of the budget for agriculture is a big deal for poor countries often faced with competing priorities. But success in agriculture reduces the pressure to finance solutions to social problems caused by hunger and poverty. Putting money into agriculture is a smart investment.

All eyes on $1 trillion
from page 23

Such is the importance of ICT to agriculture that in 2011 the International Fund for Agricultural Development (IFAD), the UN agency dedicated to poverty eradication in developing countries, called for policy innovations to make technology the main driver of African agriculture.

There is still some distance to cover to realize the dream of a $1 trillion agribusiness. But many hands are already on deck. Ghana and Senegal are forging ahead with rice production; Zambia's 88 million hectares of available land are said to be quite suitable for maize; and Côte d'Ivoire, Ghana and Nigeria already account for two thirds of the world's cocoa. There is abundant water and land, increasing private sector investment and political commitment, all of which provide flickers of hope for a sector under revival. The World Bank says that an African agribusiness sector is not just important for the sake of Africa but "essential for ensuring global food security."

Is Africa's land up for grabs?
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of "customary" usage. "Better systems to recognize land rights are urgently needed," the FAO argues in a policy brief, From Land Grab to Win-Win.

The World Bank points to the importance of international bodies helping African governments develop land registry systems. The IIED study stresses that such schemes must allow for collective registration of community lands that protect "customary" land rights.

Mr. De Schutter argues that internationally agreed-upon human rights instruments can be used to protect such rights, including those of livestock herders and indigenous forest dwellers.

According to the IIED study, the bulk of recent large-scale land acquisitions in Africa have been based on the leasing of land to foreign entities with the intent of using labour to work the land. The study argues the need for governments to include clauses ensuring the use of local labour in contracts for such schemes. "Agreements to lease or cede large areas of land in no circumstance should be allowed to trump the human rights obligations of the states concerned," Mr. De Schutter argues.

Proposals for such ideal agreements, backed by necessary national legislation and enforcement principles, are being put forward. But, as the IIED study points out, there is already a large gulf between contractual provisions and their enforcement. The gap between the statute books and the reality on the ground may entail serious costs for local communities.

A code of conduct for host governments and foreign investors could help ensure that land deals are a "win-win" arrangement for investor and local communities alike, IFPRI suggests. It cites the Extractive Industries Transparency Initiative, which binds participating governments and companies to certain standards in mining and oil activities, as one possible model for large-scale land deals.

Mr. De Schutter is sceptical that such a code can be negotiated or enforced. He instead emphasizes the existing body of human rights laws, which can be applied to large-scale land acquisitions and used to get governments to meet their obligations to citizens.

Either way, experts agree that African governments must have the will and the ability to apply laws. "Strengthening the negotiation capacity is vital," Mr. De Schutter argues. And that capacity cannot be of governments alone, he says. Local communities must also be empowered and national parliaments must be involved. Achieving that, many fear, may be the most difficult gap to bridge.

AFRICA BOOKS

Agricultural Input Subsidies: The Recent Malawi Experience by Ephraim Chirwa and Andrew Dorward (Oxford University Press US, New York City, USA, 2013; 320 pp; hb $86.95)

Agro-Ecological Intensification of Agricultural Systems in the African Highlands by Bernard Vanlauwe, Piet van Asten and Guy Blomme (Routledge, London, UK, 2014; 336 pp; hb $145)

Archaeology of African Plant Use by Chris J Stevens, Sam Nixon, Mary Anne Murray and Dorian Q Fuller (Left Coast Press, Walnut Creek, USA, 2013 293 pp; hb $119)

Biosafety of GM Crops in Kenya, Uganda, and Tanzania: An Evolving Landscape of Regulatory Progress and Retreat (CSIS Reports) by Judith A Chambers (Center for Strategic & International Studies, Washington, DC, USA, 2013; 40 pp; pb $40)

Cultivating Biodiversity to Transform Agriculture by Etienne Hainzelin (Springer, Heidelberg, Germany, 2013; 264 pp; hb $189)

Degraded Forests in Eastern Africa: Management and Restoration (The Earthscan Forest Library) by Frans Bongers and Timm Tennigkeit (Routledge, London, UK, 2013; 384 pp; pb $44.95)

Delivering Sustainable Growth in Africa: African Farmers and Firms in a Changing World (Ide-Jetro Series) by Takahiro Fukunishi (Palgrave Macmillan, Hampshire, UK, 2013; 242 pp; hb $105)

Institutional and Livelihood Changes in East African Forest Landscapes: Decentralization and Institutional Change for Sustainable Forest Management in Uganda, Kenya, Tanzania and Ethiopia by Franz W Gatzweiler (Peter Lang International Academic Publishers, New York City, USA, 2013; 312 pp; pb $46.50)

Starved for Science: How Biotechnology Is Being Kept Out of Africa by Robert Paarlberg (Harvard University Press, New York, USA; 2009; 256 pp; pb $19.50)

The Dry Forests and Woodlands of Africa: Managing for Products and Services (The Earthscan Forest Library) by Emmanuel N Chidumayo and Davison J Gumbo (Routledge, London, UK, 2013; 304 pp; pb $44.95)

The Roots of Developing Agriculture in the South African Context by McGreggor S. Ntuli (AuthorHouseUK, UK, 2013; 108 pp; pb $15.18)

Values, Payments and Institutions for Ecosystem Management: A Developing Country Perspective (In Association with United Nations Environment Programme) by Pushpam Kumar and Ibrahim Thiaw (Edward Elgar Publishing, Cheltenham, UK, 2014; 320 pp; hb $135)

Women, Livestock Ownership and Markets: Bridging the Gender Gap in Eastern and Southern Africa by Jemimah Njuki and Pascal C Sanginga (Routledge, London, UK, 2013; 168 pp; hb $99.50)

BOOK REVIEW

West African Agriculture and Climate Change: A Comprehensive Analysis

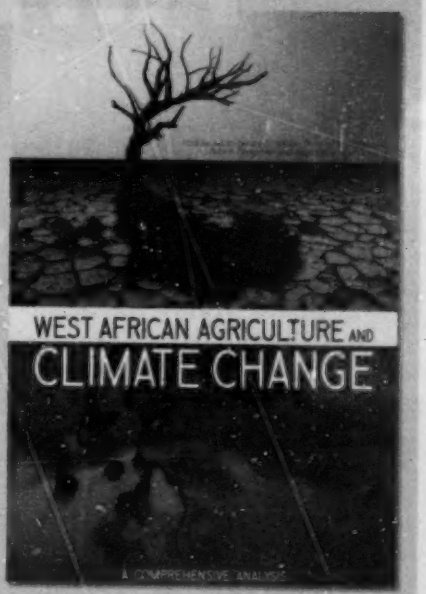
Edited by Abdulai Jalloh, [et al.]

International Food Policy Research Institute, Washington, DC., USA, 2013

Sub-Saharan Africa's population will skyrocket to 1.7 billion in less than 50 years, with people in West Africa making up 35% of the total. As such, the larger population will be consuming more food and depending more than ever on natural resources. However, because of climate change, more efforts will be needed in sustainable food production and food security.

According to the book, *West African Agriculture and Climate Change: A Comprehensive Analysis*, edited by Abdulai Jalloh, Gerald C. Nelson, Timothy S. Thomas, Robert Zougamoré and Harold Roy-Macauley, since people in sub-Saharan African countries depend mainly on agriculture, the consequences of climate change could have a devastating impact on that sector. "Climate change, in terms of both climate means and variability, poses a great threat to farmers in the region... [including] reduced yields, lower farm incomes and reduced welfare." As a result, the authors write, these countries have identified medium- and long-term plans to address the impact of climate change highlighted by the United Nations Framework Convention on Climate Change.

The book, released in December 2013, goes into great detail pointing out how extreme weather patterns will affect the agricultural yields of 11 West African countries of Benin, Burkina Faso, Côte d'Ivoire, Ghana, Guinea, Liberia, Niger, Nigeria, Senegal, Sierra Leone and Togo, which together occupy almost 5 million sq. kms.



The publication is the first in a series of three that covers West Africa, East Africa and Southern Africa. With 442 pages filled with vivid, coloured graphs and charts to illustrate key points, it is a good resource for information and education for those interested in the effects that climate change will have on agriculture in West Africa.

— Pavithra Rao

RESOURCES

The Comprehensive Africa Agriculture Development Programme (CAADP)
www.nepad-caadp.net

Africa Can Help Feed Africa: Removing barriers to regional trade in food staples
siteresources.worldbank.org/INTAFRICA/Resources/Africa-Can-Feed-Africa-Report.pdf

Africa's Agriculture and Agribusiness Markets to top US$ One Trillion in 2030
www.worldbank.org/en/news/feature/2013/03/C4/africa-agribusiness-report

Rebuilding West Africa's Food Potential
www.fao.org/docrep/018/i3222e/i3222e00.htm

Safeguarding Genetic Diversity
www.fao.org/docrep/019/i3394e/i3394e.pdf

Africa Human Development Report 2012
www.afhdr.org

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www.bit.ly/1dItDcA

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www.agra.org/download/5226fe87ea799

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